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Editorials

POLIOMYELITIS SEASON IS NOW UPON US

The season of poliomyelitis, in all ruthlessness and fury, is now upon us. According to the twentieth weekly bulletin of the Illinois Department of Public Health, the prevalence of poliomyelitis (infantile paralysis) has run a course almost exactly parallel to that of the year 1937, when later in the season a sharp epidemic wave developed. At this writing no one can foretell whether the disease will reach epidemic proportions in the year 1938. In all probability the prevalence of the disease will increase considerably before frost appears in the Autumn. Without exception, over a period of years, the seasonal incidence of Poliomyelitis in this State has reached a peak during the period of August-October. According to the health department bulletin more than 200 cases have been reported in each year since 1929 and the trend since 1933 has been upward. Our latest source of information states that to date this year 21 cases have been reported against 23 in the same period in 1937.

Based on the history so far available the Director of Health suggests that a minimum of 100 to 200 cases of poliomyelitis will occur in Illinois between now and December with the likelihood a gradually increasing prevalence until September or October.

A large majority of authorities who have done research work in infantile paralysis agree that the atrium of infection is through the olfactory area of the nose, along the olfactory nerves and the central nervous system.

The early manifestations of the disease are fever, headache, irritability, perhaps vomiting, in all likelihood tremor in the hands and in all cases a tender rigid spine, which will make it impossible for the child to touch his chin with his knee.

A year ago much was said about applying zinc sulphate solution to the human olfactory area

with the idea of preventing poliomyelitis. The work of Tisdall, Brown and their coworkers during the poliomyelitis epidemic in Toronto in the Fall of 1937 on the clinical application of zinc sulphate as a means of prophylaxis will lead to the conclusion that there is no evidence of protective value of a nasal spray of one per cent zinc sulphate, even though applied by otolaryngologists.

Park and his colleagues have demonstrated by carefully controlled studies that convalescent serum possesses no value in prophylaxis or in the therapy of infantile paralysis. Other clinicians feel that so far the most potent remedy seems to lie in the use of convalescent serum.

Since no positive method in preventing the disease has developed, efforts at control will be most fruitful if concentrated on preventing permanent physical disability. Permanent crippling is the chief risk of the victims of poliomyelitis.

This affliction like smallpox and syphilis demands definite prophylactic rather than curative measures. Since isolation is one of the greatest factors in checking the spread of the disease, its possibility should be at the forefront of every physician's suspicions in cases where even one of the possible symptoms of infantile paralysis appears. There is no immunity age for the scourge and this too, is an item demanding recognition.

Alertness by physicians in recognizing early symptoms and signs in ill children during the poliomyelitis season may lead to preventing paralysis in a large percentage of cases if patients are promptly put to complete rest under the supervision of a competent physician. All authorities agree that complete rest in bed from the very onset of symptoms is the greatest factor in preventing paralysis. Absolute rest during the pre-paralytic or acute stage is regarded as so important that the moving of the patient from bed to bed or from home to hospital should be prohibited.

It is regrettable that so far the science of medicine has so little to offer in the prevention or in the treatment of this dread disease.

ILLINOIS ASSOCIATION OF MEDICAL JOURNALS

An early meeting of the new Illinois Association of Medical Journals which organized on May 17, 1938, during the 98th convention of the Illinois State Medical Society at Springfield, will probably be held in the state capitol again.

Four regional or county medical publications were active in the founding of the first statewide association of its kind in the world so far as known. Dr. Kenneth E. Schnepp, M. D., 614 East Capitol Avenue, Springfield, will serve as president during the ensuing year and Dr. George W. Dryer, M. D., Room 735-A, Fifth Avenue Building, Moline, will be secretary-treasurer.

The charter members to date are *Sangamon County Medical Bulletin, Adams County Medical Bulletin, Peoria Medical News,* and *Rock Island County Medical News.* There are 16 known regional and city journals in Illinois although LaSalle county has an annual publication.

It will be the constant aim of the new association to eliminate overlapping of circulation to doctors and hospitals in contiguous territory within the state, giving the commercial firms bona fide coverage for the first time, and also to exchange editorial, make-up and advertising ideas for the benefit of organized medicine.

All existing medical publications are urged to open correspondence with the offices to determine the possibility of getting more members before the charter is closed.

Dr. Schnepp was temporary chairman and Dr. Emil Levitin, editor of the *Peoria Medical News,* temporary secretary, at the meeting. No fees will be charged to members for the present.

IS TOBACCO EVER THE INCITING CAUSATIVE FACTOR OF DISEASE?

A campaign of education against the excessive use of tobacco would seem to be obligatory on the medical profession. Correlation of important and patient research throughout the world indicates that nicotine is not only an insidious, certain and progressive poison both because of its inescapable habit forming character, but also because there is far more than presumptive evidence that excessive smokers are both likely candidates for gastrointestinal disorders and marked changes in cardiac activity but that smoking exerts a very great influence in causing associated syndromes of nervous, mental and circulatory diseases.

The campaign of education of course will be hampered by the fact that the tobacco industry is one of the largest and richest in the world and

is both able and willing to spend lavishly in order to retain such preeminence. The medical profession in combating this ever growing evil will find itself in the same bog that confronts every attack upon a pleasant vice that on the surface does not indicate the menace it contains against public health and welfare. One of the most quoted of modern philosophers has written of the tobacco solace: "A woman is only a woman but a good cigar is a smoke." Medicine is not attempting to discredit the tobacco industry per se, for the industry from the farmer to the merchant and the ultimate consumer is a valuable unit in national prosperity, but—and to a far higher degree, so is the public health.

Nicotine stands unchallenged as one of the most deadly poisons known to science yet more than one hundred and fifty-three billion cigarets were manufactured in the United States in 1936, and the consumption of tobacco is growing every year. Eight million pounds of tobacco leaf was consumed in 1900, and three hundred and seventy-seven million pounds in 1934. From 66 to 80 per cent of the population smoke. There are at present more than 350,000 people confined in our insane asylum, and the annual increase appears to be about 20 per cent. This is a discouraging aspect of the question of human betterment. Manufacturers of cigarets spend millions of dollars annually in the apparently easy task of persuading nearly every boy and girl in the country to smoke. Alluring and carefully devised advertisements appear to drive home misleading and false claims that cigaret smoking is an almost universal panacea for many problems pertaining to contentment and well-being. Bill-boards, the press and the radio unceasingly strive to teach the entire nation that the possession of a sound mind in a sound body is, to a marked extent, dependable upon smoking. Our youth are constantly reminded that cigarets are prerequisites of health and happiness, and that smoking is a necessary accomplishment when one seeks to associate familiarly with the cultured and higher strata of society, and to acquire such poise and urbanity.

Complacency and a feeling that all is well should give way to deep speculation and grave concern as to what will be the mental and physical status of future generations. If physicians are accepted as guardians of health it would appear to be a professional duty to disseminate concrete facts relating to this important subject. Physicians should sound warning notes against the harm and potency of nicotine, with its long chain of potentialities and dangerous metabolic disturbance. In an evaluation of the potency of nicotine and the injurious effects produced by excessive smoking, assiduous attention should be directed toward the fact that when smoking stops, an improvement follows that is both subjective and objective, and there is a marked amelioration of symptoms.

Earnest and painstaking scientists and their co-workers present a great volume of research that should be considered as equivocal evidence that claims made for the mildness and innocuousness of cigarettes and cigars are misleading and fallacious. Tobacco interests use every means at their command to convince the careless and impressionable public that tobacco is not only harmless but, an important factor in bodily economy. Advertisements ask us to believe that smoking cures frayed nerves, aids digestion in no uncertain manner, and serves as an excellent weight reducer. One tobacco company admits that cigarettes may be denicotinized, but that when this is done the appeal and "character" are lost, so despite the fact that nicotine is twice as deadly as strychnine and that it ranks second in point of lethal dose to aconitine it is not removed. Throat irritation, one manufacturer says, is not caused by tobacco, nicotine or paper, but it is due to glycerin placed in the tobacco to hold moisture. This, we are informed also by manufacturers has been overcome by using diethylene glycol instead of glycerin. Drs. Canon and Geiling[1] have shown that nicotine is a cumulative poison, resulting in hydropic degeneration of the liver and kidneys. Its toxicity is undisputed.

A cigarette contains about one gram of tobacco with an average nicotine content of 2.52 per cent. Similar to tarry oil this rank smelling liquid alkaloid enters the circulation rapidly during inhalation. Approximately 2.0 mg. of this poison is taken into the circulation when about two-thirds of a cigarette is smoked and inhaled in a period of five minutes. Numerous investigators have found that when the cigarette is tightly packed and when it is smoked rapidly, nicotine and other irritating products are increased in amount, especially when the tobacco contains moisture. Tarry oil that collects in the

stump of a cigar or cigarette, or in the bowl and stems of a pipe contains nicotine and pyridine bases. Pyridine causes irritation of mucous membranes. Long ago scientists found that when a drop of nicotine is placed on the tongue of a cat, dog or other small animals that death follows in a few minutes.

Secondary complications, such as a cough and a husky or hoarse voice, are observed in many smokers. Others complain of dryness and irritation in the nose and throat. Examination of the nose frequently reveals congestion of the mucous membrane, and the conjunctiva appears red and congested in many other smokers. Some are disoriented and many are restless and miserable unless they smoke almost incessantly. Who has not seen smokers hurriedly light a cigarette, and then inhale deeply when the fast approaching street car or other circumstances make it certain that the cigarette must be thrown away the next moment? Stimulation of the entire nervous system followed by depression is the characteristic action of nicotine. Other products of the combustion of tobacco are carbon dioxide, carbon monoxide, ammonia and aldehydes such as formaldehyde, tars, *formic acid and furfural.* Scientists vary in their opinions pertaining to which products of combustion produce the greatest irritation of mucous membranes, but some believe that formic acid, formaldehyde and acrolein are the principal irritants. Ammonia irritates the conjunctiva of some smokers. The last third of the cigar or cigarette is said to contain more nicotine and other harmful substances when it is smoked.

Nearly all who have made scientific investigations of this subject are convinced that a smoker's saliva causes more or less discomfort and irritation of the stomach. A glance at literature reveals that smokers have a higher incidence of cancer of the lip, tongue, mouth, esophagus, larynx and lungs. Heartburn is one of the chief complaints of smokers who have functional gastric disturbances. Some observers are of the opinion that smoking is an exciting factor in thromboangiitis obliterans, and that there is an increase in blood pressure averaging between 12 to 15 mm. systolic and 10 to 14 mm. diastolic. Changes in pulse rate and blood pressures produced by nicotine are the result of its stimulation or paralysis of the vagus and sympathetic nerves or their ganglia. It has also been observed that the blood flow in the nail fold capillaries is retarded and occasionally completely stopped. In some cases those with Buerger's disease complain of burning and stinging sensations accompanied by pain or numbness in the feet after smoking a cigarette. They may also complain of headache or fullness in the head, restlessness, insomnia, unsteadiness of gait and dizziness.

Palpitation, breathlessness on slight exertion and precordial pain are other symptoms caused by smoking, together with marked changes in cardiac activity such as auricular and ventricular arrhythmias. Amblyopia from excessive smoking is regarded as a common observation, and there is significant information pointing to the fact that the delicate mechanism of the ear is frequently stimulated adversely. There is also conclusive evidence that in such pathologic processes as impairment of the peripheral circulation and gastric and duodenal ulcers, tobacco is definitely contraindicated. In many instances leukoplakia buccalis follows as a consequence of smoking to excess. Alvarez[2] found that "nicotine" even in moderate concentrations, seems usually to paralyze some part of the nervous mechanism of the bowel. . . In massive doses it is probably a general protoplasmic poison which can injure muscle fibre."

Experiments of Mulinos and Osborne[3] demonstrated that when from one to five per cent of glycerine was added to cigarette tobacco the smoke became more irritating to the tongue, pharynx and larynx, but irritation and coughing decreased when the same amounts of diethylene glycol were added. With the results of these investigations before them and accepting the fact that tobacco smoke is an irritant known to stimulate salivary flow, Holck and Carlson[4] undertook to measure the salivary responses of 26 men and two women. They sought to determine whether the flow of saliva decreased when diethylene glycol was added to cigarette tobacco, inasmuch as other workers reported that it lessened the irritative properties. Thirteen one-hour tests were conducted upon each of 28 subjects and saliva was removed from the mouth by a Dewitt dental saliva ejector, while suction was provided by a water pump. Three kinds of cigarettes were used and while all contained the same kind of tobacco one contained tobacco alone, a second tobacco and glycerin, and the third cig-

arette contained tobacco and diethylene glycol. The results of this experiment indicated that one cigarette was no more irritating than another, and that the flow of saliva increased about 50 per cent. In a number of instances more saliva was collected from subjects who smoked cigarettes containing tobacco alone, while in eight persons tobacco containing diethylene glycol evoked the greatest response. It is the opinion of these scientists that "a method for determining the irritating properties of cigarettes which relies solely upon the opinions of ordinary smokers cannot be considered reliable."

There is a constantly increasing volume of literature in which we find the observations of workers who have studied electrocardiographic changes produced by injecting nicotine into dogs and rabbits. Moreover, numerous writers present the results of their work in determining the effect of tobacco smoke on the human heart by taking electrocardiograms. Graybiel[5] and his associates conducted a series of experiments on 45 persons of different ages and habits that were carried out by methods similar to those described by other writers. Smoke of cigarettes was inhaled by the subjects until toxic symptoms appeared or until the cigarettes were consumed. Unusual signs and symptoms were recorded and at the same time electrocardiograms were taken frequently, while blood pressure and pulse rate determinations were carefully studied. Twenty-eight complained of cerebral, cardiac, or gastrointestinal symptoms during the tests. Thirty-nine showed an increase in heart rate which averaged 13 a minute, four a decrease which averaged 15, while in two no change was observed. Arterial blood pressure increased 13 mm. Hg systolic and seven mm. diastolic in 24 of 31 tested. In six there was an average decrease of 13 mm. systolic and three mm. diastolic; in one no change was noted. "The commonest electrocardiographic change was a decrease of from 1 to 4.5 mm. in amplitude of the T-waves in Lead I or II which was observed in 15 instances." The observations of these investigators also indicate that attacks of angina pectoris follow smoking in patients with a small coronary reserve. Other workers have shown that it occurs more frequently among nonsmokers, and they conclude that smoking is not primarily responsible for that disease.

In the summary of Thienes and Butt these authors state: "1. That experimental and clinical studies supporting the thesis that chronic tobacco or nicotine poisoning leads to degeneration of circulatory organs, are poorly controlled and therefore of doubtful value. 2. Experiments of the present authors show greater vascular degeneration in control animals than in animals chronically poisoned with nicotine. 3. It is suggested that acute peripheral vasoconstriction associated with smoking may exaggerate the effect of existing vascular disease upon the nutrition of the extremeties. 4. Smoking probably does not produce organic disease of the heart. They feel that little weight can be given to the uncontrolled experiments of the early part of this century, and they concur in the opinion of Harkavy and Sulzberger neither of whom believed they had proven a relationship between tobacco and vascular disease, but they considered their data to be suggestive."

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RADIO ARTIST BROADCASTS OPINION ON MATTERS PERTAINING TO MEDICAL CARE

One of the reasons that the iniquitous Sheppard-Towner bill was passed was because the general public did not know what it was all about. Socialized medicine however is being well explained on all sides to a public that is asked only to "lend its ears."

Even the radio artists are getting justifiably excited about the situation and from the popular singer who gave us "When the Moon Comes Over the Mountain," Kate Smith listeners in from coast to coast heard April 25, 1938, the lady's own ideas on the topic, "Doctors and Doctors Alone Should Decide the Question of Socialized Medicine."

In case, doctor, *you* missed hearing her, let us present this varbatim report, transcribed

from Station WABC for the Public Relations Bureau of the Medical Society of the State of New York by *Radio Reports, Inc.*, of New York City.

"There are so many reforms these days that we can hardly keep track of them. Did you know that one of these reforms affects your doctor and is called 'socialized medicine'? Such a plan would mean simply this. The medical colleges would represent a sort of doctor factory. And instead of going into private practice after serving as interne, doctors would join the staff of large hospitals and clinics. People in need of treatment would apply to these centers, and the doctors on call for cases requiring home treatment would be assigned by the central bureau in each city or town. The group which is in favor of this movement believes that the treatment of the sick should be a direct responsibility of the government, the charges for the services of skilled medical men should be paid for in taxes, so that everybody would pay a little and all those in need of doctors would get the benefit. In much the same way that education is at present administered, so would socialized medicine operate.

"I thought I'd like to talk it over with a man who is in a position to enlighten us a little bit, so I asked Dr. Irvin Abell, president-elect of the American Medical Association, about it. Speaking for the association, Dr. Abell said very definitely that the organized medical profession is opposed to the socialization of medicine for many reasons. Among them he cites these: in nearly all systems of socialized, or state-managed medicine, no provision is made for the care of the poor, and limited provision, if any is made for the care of the unemployed. Little or nothing is done to develop or provide preventive services and the tremendous cost of administration is added to the actual cost of medical service. Since the patient under this system cannot choose his doctor, it is difficult to preserve the confidential relationship so necessary between the doctor and the patient. The tendency in such a system is toward superficial diagnosis and mechanical treatment. Physicians are compelled to comply with regulations which take a lot of time and effort which should be devoted to the proper care of patients. Placing physicans under the control of officers of the state, in whose selection the doctors have no voice, and under which rewards for the work will not be based on the quality of service, will produce conditions that will not be likely to attract desirable and well qualified men and women into the medical profession. This would result in lowering the high standard of medical service in this country. That is what Dr. Abell has to say.

"Of course I'm not qualified to say which is the better plan, but I do know this. We had a family doctor at home and we all loved him very much. A friendly man, who came in and called us all by our first names and chatted with us about the little things which were going on in our community. He represented something more than a doctor to us. We had faith in him, and I, for one, would be sort of sorry to see socialized medicine take his place. Since these family doctors have justified the faith that we've always put in them, I feel it is these doctors and these doctors alone, who should decide whether the way we've been doing in the past is the best way to operate, or whether the plan should be changed to this latest reform idea of socialized medicine. We've trusted our doctors with some pretty important decisions for many, many years, and I think we can trust them with this one. They should know the answer better than we do, and their answer should be final, legislators and laymen to the contrary."

A SURVEY OF GROUP HOSPITALIZATION PLANS

The Bureau of Medical Economics of the American Medical Association found from its survey of group hospitalization plans that there were 172 such plans located.

In this list, some:

1. 56 plans were in operation.
2. 34 plans were still in the promotional stage.
3. 82 plans had either consolidated with other plans, or had been discontinued or were otherwise inactive.

Without considering the 22 plans formed in 1936 because, as the report says, in all due honesty, they earn the gift of "the benefit of the doubt," the result is still rather disconcerting to those who find in group hospitalization another medical economics panacea. For accord-

ing to the figures quoted above out of 150 group hospitalization plans promoted in the period between 1918 and 1935, fifty-one or more than a third by a slight margin are in operation; 11 or a fraction more than a tenth are still being proposed and 55 or more than half are inactive. The A. M. A. bureau found that many of the discontinued plans were reorganized as insurance companies. The profession may be excused for thinking that possibly that is all that they were ever intended to be, and that their medical efficiency lay highest in the brain of some actuary. At any rate it is as much out of character for the profession of medicine to engage in the business of insurance as it is for the insurance business to attempt the practice of medicine. Some day there may evolve a perfect group hospitalization plan that will cause no ruckus with the law of ethics nor the law of averages. In the meantime while "trial by error" seems to be the only way in which really to throw light upon the group hospitalization plans touted everywhere, it would appear that medical men should be decidedly chary of either subscription to or participation in any such plans that present too glowing a face. There is a wise old adage that most of us learned in the days of high school Greek and Latin, though it is so thoroughly translated into every language that it is a familiar phrase to others than the academically trained, and it is:

"Beware of Greeks Bearing Gifts."

The average group hospitalization plan, no matter how legitimately evoked, needs careful analysis, if not actual pasteurization.

THE 1938 ANNUAL MEETING

The 1938 annual meeting of the Illinois State Medical Society held in Springfield on May 17, 18, 19, was one of the best attended and best arranged meetings in the history of the society. Although the weather was threatening each day, and many were prevented from attending the meeting on account of storms, the attendance throughout the meeting will compare favorably with any of the previous downstate meetings.

The scientific programs were carefully arranged and appealed to the many members and guests present, and all were well attended. A very large audience heard the Oration in Medicine delivered by George Draper of New York City, and the Oration in Surgery presented by Irvin Abell of Louisville. More general sessions were arranged for the meeting this year and the arrangement proved highly satisfactory to all present.

The Hall of Health, where dozens of health exhibits were displayed for the public during the entire week, was visited by thousands of people who were interested in the fine array of health information that was made available for them. No admission charge was made and attendants were ever anxious to give all possible information to the many people desiring it.

Once more at the annual meeting many elaborate scientific exhibits for the medical profession were shown and each year these exhibits are becoming more popular with the members of the State Medical Society. These exhibits were carefully selected by the Committee on Scientific Exhibits and each of them represented a vast amount of work on the part of those who prepared them. The awards presented by the Society for the best exhibits in each of the three classes appear in this issue of the ILLINOIS MEDICAL JOURNAL.

The following officers, Councilors, and Committees were elected at the second meeting of the House of Delegates:

President-Elect .....James H. Hutton, Chicago
First Vice President.....Harry Otten, Springfield
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Treasurer .....A. J. Markley, Garden Prairie
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Councilor for the 2nd District...E. C. Cook, Mendota
Councilor for the 3rd District..P. E. Hopkins, Chicago
Councilor for the 11th District.....
.....E. S. Hamilton, Kankakee

Delegates to American Medical Association (for 2 years)—Charles J. Whalen, Chicago; G. Henry Mundt, Chicago; J. J. Pflock, Chicago; R. K. Packard, Chicago; E. S. Hamilton, Kankakee.

Alternate Delegates to American Medical Association—M. I. Kaplan, Chicago; G. L. Kaufmann, Chicago; H. E. Quinn, Chicago; C. E. Humiston, Chicago; L. O. Frech, Decatur.

STANDING COMMITTEES

Public Relations—W. S. Bougher, Chicago; Fred H. Muller, Chicago; S. W. Lane, Kankakee.

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Medico-Legal (2 for three years)—J. R. Ballinger, Chicago; C. U. Collins, Peoria.

Medical Education and Hospitals—N. S. Davis, III, Chicago; W. R. Marshall, Clinton; H. O. Munson, Rushville.

Relations to Public Health Administration—E. H. Blair, Chicago; Andrew Gansevoort, Chicago; Thomas Meany, Chicago; C. G. Pool, Compton; L. O. Frech, Decatur.

The total registration of physicians at the meeting was 1,335, while the total registration was approximately 1,600.

Rockford was selected for the 1939 annual meeting subject to the approval of the Council after an investigation is made to be sure that adequate facilities are available. An announcement from the Council will be made in the ILLINOIS MEDICAL JOURNAL in July relative to the final decision.

Once more Sangamon County Medical Society and the many cooperating organizations in Springfield have proven conclusively that they are able to make all necessary local arrangements for a successful annual meeting.

AWARDS FOR BEST EXHIBITS AT THE 1938 ANNUAL MEETING

CLASS 1

Silver Medal

"Experimental Intersexuality in Rats." R. R. Greene, M. W. Burrill, A. C. Ivy, Northwestern University College of Medicine, Chicago.

Bronze Medal

"What is Normal Blood Pressure?" Samuel C. Robinson and Marshall Brueer, Chicago.

Certificates of Merit

"Production of Genital Growth in the Male." W. O. Thompson and N. J. Heckel, Rush Medical College and Prysbyterian Hospital, Chicago.

"Experimental Production of Homogeneous Osteoporosis in Dogs." R. A. Bussabarger, Smith Freeman, A. C. Ivy, Northwestern University College of Medicine, Chicago.

"Catgut Absorption—Experimental and Clinical Study." Hilger Perry Jenkins, University of Chicago Department of Surgery, Chicago.

CLASS 2

Silver Medal

"Diagnosis and Treatment of Pneumonia." Medical Department, Northwestern University College of Medicine.

Bronze Medal

"Puerperal Sepsis." Department of Public Health, State of Illinois, Henry Horner, Governor; Frederick H. Falls, Maternal and Infant Hygiene, and the University of Illinois College of Medicine, Department of Obstetrics and Gynecology, Chicago.

Certificate of Merit

"Bronchography in Bronchial Asthma"—Emmet F. Pearson, Springfield.

Class 3

Hall of Health

Silver Medal

"Foreign Bodies in Lung and Oesophagus." Department of Bronchoscopy, University of Illinois College of Medicine.

Bronze Medal

"Public Health Service and Preventive Medicine." State Department of Public Health, A. C. Baxter, Acting Director, Springfield.

Certificates of Merit

"Recovery" and "Trachoma Clinics." Department of Public Welfare, State of Illinois.

"The Heart and Lungs Through Forty Centuries." Northwestern University School of Medicine, Chicago.

"Progress of Scientific Medicine in a Small City." Pinckneyville Junior and Senior High Schools.

THEY CAN DO LIKE THEIR DADDIES DID—HIRE THE DOCTOR OF THEIR CHOICE—SOCIAL UPLIFT IS STOOGE ACT

Because of the excellent method of presentation by one of the most virile of the lay writers of the day, it is with pleasure that "Social Uplift Is a Stooge Act" is here reprinted in its entirety from the *Chicago Daily News* of Friday, May 13, 1938. Harper Leech, the author, is one of the best known, most widely read and most generously quoted economists and editorial writers of the day.

According to one of the endowed pinko weeklies Dr. Morris Fishbein is one of the principal sachems of a medical Tammany Hall, the American Medical Association. Doc Fishbein in the regalia of a Tammany sachem would add something to the local color of Chicago's near North Side, but it took Greenwich Villagers to think that one up. The headquarters of the association has little about it to suggest a political headquarters.

No one ever got a drink there even under the 18th, when doctors were a privileged class, assured of a minimum income by their Volstead law permits to write prescriptions for spiritus frumenti.

I guess that Fishbein can take care of himself in any battle with the pinkos and I know nothing of the merits of the controversy between orthodox medical ethics and "social medicine." But I can't help noting certain implications of a paragraph in the pinko punko publication.

It says: "A special committee of the New

York State Medical Society has formulated a program calling upon the government to provide medical care and health insurance for the indigent and lower income groups." There we have the same old line—"program," "government aid" and "groups." Take those cliches out of uplift patter and New Deal propaganda and what would be left?

Back of the words and phrases lie certain assumptions that spell evil, not good, for the poor. While folks are poor, no red-blooded human being can object to helping them, and I can't get excited about whether the necessary help is to be paid for by the government or by private citizens.

What annoys me is the patronizing unctiousness and sanctimony that pervades all this alleged philanthropy and uplift, I don't care whether it is part of a fireside chat, a paragraph in the report of a tax-dodging foundation left by some financial buccaneer, or one of Mme. Perkins' communiques.

Having been born in a county where there was nobody worth more than $20,000 and no propertyless people, except a few half-wits at the county farm, I suppose I am a hopeless anachronism, a hick who has never yet brushed all the cockleburs off his pants. But neither have I ever got around to the idea that there is any reason for people to remain poor in America or that it is necessary to have static social "groups."

* * *

When I hear people going on about their great love of the poor, I can't help recalling old Victor Hugo's crack that the only good the rich could do the poor would be to get off their backs. And today I think that goes quite as aptly for politicians, philanthropists, social workers and the whole kit and kaboodle of the "social minded."

If this country would go back to real Americanism, the most radical social creed on earth as exemplified by Jefferson, Jackson and their kind, we would have no need for "social medicine," "social security," or any other of the "social" abominations of the New Slavery that Herbert Spencer warned us against more than 50 years ago.

The people of the great cities of America today, of all the races and creeds, are just as capable of self-help and self-support as were the men and women who started this country. I say that after having looked 'em over in plenty of cities. Nor do they want to be nursed, coddled and patronized.

Back of the social workers, the foundationeers, the professional philanthropists and all who have developed into beneficiaries of a vested interest in poverty and dependence are the grab-it-alls whose vested interests and special privileges depend upon the limitation of production and the curtailment of opportunity and competition. Today the cost of relief and the social uplift are the price paid for monopoly. The uplift is a stooge act.

Open the throttle of the American economic engine and the people of America will have no need for "social medicine." They can do like their daddies did—hire the doctor of their choice.

MENTAL SYMPTOMS ASSOCIATED WITH BRAIN TUMOR: STUDY OF 530 VERIFIED CASES

Moses Keschner, Morris B. Bender and Israel Strauss, New York (*Journal A. M. A., March 5, 1938*), studied a series of 530 patients with cerebral tumor in order to determine the frequency of occurrence, nature and localizing value of abnormal mental reactions during the course of the disease. There are no mental symptoms that are specific for cerebral tumor. Mental symptoms are almost twice as frequent in patients with supratentorial as in those with infratentorial tumor of the brain. Disturbances in memory are predominantly more frequent in individuals with supratentorial tumor than in those with infratentorial tumor. Complex visual and auditory hallucinations are more frequent in patients with tumor of the temporal lobe. Crude auditory hallucinations are heard by the patients most commonly on the side of the tumor, whether the tumor is located above or below the tentorium. Localized tactile hallucinations indicate that the parietal lobe opposite to the side of the hallucination is the seat of the tumor. The most severe and most varied type of psychic disturbances are observed in patients in whom the tumor involves both sides of the brain. Psychogenic reactions are determined more frequently by physical or by subjective disabilities and by the total personality of the individual rather than by the location of the tumor in any one part of the brain. The pathogenic factors in the production of mental symptoms, in the order of their importance, are (1) involvement of both sides of the brain, (2) increased rate of development of symptoms of tumor of the grain in general, (3) the rapidity of the tumor growth, (4) sudden appearance and rapid development of intracranial hypertension and (5) supratentorial location of the tumor. The age, general condition and premorbid personality of the patient modify the quality of the mental reactions to physical symptoms.

MEDICAL ECONOMICS

H. M. Camp, M. D.
E. P. Coleman, M. D.
John R. Neal, M. D.
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Edited by the Committee on Medical Economics of the Illinois State Medical Society
E. S. Hamilton, M. D., Chairman
Kankakee, Illinois

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C. S. Skaggs, M. D.
C. E. Wilkinson, M. D.

Address all letters and communications to the Chairman.

The Chairman of this Committee for the year 1937-1938 is taking the liberty of editing this column for this month in order to keep the work of the same progressing until a new Committee can be appointed by the Chairman of the Council at its organization meeting early in June.

One returns from the annual meeting of the Illinois Medical Society each year with increasing faith in its members and renewed hope for the future of medicine. And this in the face of the ever increasing barrage of propaganda being presented in the lay press, both newspaper and periodical. There is no doubt that the rank and file of the medical profession is alarmed as to the future of medicine. The attendance at the Secretaries Conference, where the current problems of the medical profession were discussed by the outstanding men of the profession of Illinois, aided by representatives of the American Medical Association, was the best in recent years. The duties of officers in County Societies was discussed and all present received new ideas as to the duties and the importance of the same. The proposed Survey of the A.M.A. was presented by Dr. Leland and as the scope of the same became apparent to those present, the secretaries appreciated the large amount of work that would be required as well as the time needed to complete the same. At the end of the meeting many of those present expressed the opinion that sufficient time had not been allotted to this important phase of our meeting. On the last day of their meeting, they requested that more time be allotted at the meeting in 1939 and that a better time be given them. The writer has long been of the opinion, that more time should be given to the instruction and assistance of the secretaries in their work, which after all is the real administrative work done between annual meetings aside from that done by the Council. If we can in any way make their work easier and more effective, it becomes our duty as officers of the society to do so. Surely, they should have additional opportunity to acquaint themselves with the duties and problems of their office. This committee feels that it might be a good idea to have a special day assigned for a conference of the officers of the component county societies at some time other than the annual meeting to discuss the problems of the officers of county societies. When this would be held and where could be decided later. Also the question of paying the traveling expenses of the officers to the meeting, can be decided later.

The Hall of Health, a new venture for the education of the laity, was an outstanding success. At this time it seems that it should be continued, improved and altered, as suggestions and criticisms appear. It also seems that it could best be handled by the Educational Committee.

Most of the members of the House of Delegates seemed to appreciate the accomplishments of the past year and to recognize the fact that our problems are increasing instead of decreasing. Increasing problems will mean increased expense and the House appreciated this by leaving the annual dues at eight dollars for the ensuing year. While the elections were spirited at times, the feeling between the candidates was excellent both before and after the elections and there should be the best of cooperation during the coming year.

Several magazines have in recent issues criticized the medical profession quite severely. Probably the magazine *Ken* in an article entitled "Doctors Versus Health" hit a new all time high in "panning the profession." It seems that there must be a definite plan to ridicule and belittle the medical profession, when such articles can be printed. It is also reported that a

Samuel E. Munson, M. D.

President, Illinois State Medical Society, 1938-1939

recent issue of *The American Magazine* has adopted the same attitude. However, the writer has not been able to locate the article referred to. The newspapers seem to take especial delight in announcing dissension in the ranks of the medical profession. On May 19, the day the annual meeting of the Illinois State Medical Society was completed, when there was considerable interest to both the public and the profession to be reported as a result of the meeting, one of the papers of Chicago played up the report of the Medical Society of New Jersey, which criticised the work of the Editor of the *Journal of the American Medical Association*. With so many subjects of medical interest to which it might have given space, it is difficult to understand why they continue to feature criticism of this nature, which after all are of importance only to our members and should be discussed and decided in our own meetings and not in public.

The Chairman of the Committee has been encouraged by the number of members of the society who are requesting information in regard to preparation of papers to be presented before lay groups. This is our main field of education of the laity and every county society should have several men who are both willing and ready to talk on the future of medicine, state medicine and allied subjects, whenever they are requested to do so. This can be done by practically any member of the profession who has read the articles appearing in either this Journal or the J. A. M. A. during the past year and then taking time to correlate them. If additional data is desired, package libraries on either subject are available at the office of the Secretary of the Educational Committee of the Illinois State Medical Society, Miss McArthur, at 30 North Michigan Avenue. It should be one of the objectives of the officers of every component county society in the state to have a selected group of men prepared for this work.

The members of the society should watch the report of the action taken in regard to the future of the work of the Medicolegal Committee of the Illinois State Medical Society. Aside from inability to pay the cost of lawyers' fees, the work of the committee is in no way hampered and in fact it should be expanded. When this is understood by the members, we hope that they will feel better about the future work of this committee, which has been under a cloud the past year.

This has been a rather general discussion of the business of the annual meeting and we hope that it will stimulate you to read the proceedings of the meeting in detail including the annual report of the officers as they are published in the ILLINOIS MEDICAL JOURNAL in July. It is the duty of every member to know what the officers of their society are doing and the annual reports will help them to do so.

E. S. HAMILTON,
Chairman of Committee.

Correspondence

NO DUPLICATION OF FINGER PRINTS

Dear Dr. Whalen:

I have just received a clipping entitled "Finger Printing Is Not Infallible" from the April, 1938, issue of the ILLINOIS MEDICAL JOURNAL, which was forwarded to me by a member of the medical profession in Illinois. (See page 352.)

I have noted the second sentence of this article which reads as follows: "This does not mean that the popular belief that two fingerprints are alike is erroneous." I feel that this sentence does not convey the meaning which is intended, as it indicates that there is a popular belief that two fingerprints are alike which, of course, has no foundation. It also appears to me that the article indicates the Bertillon system of identification has been confused with the fingerprint system, and I did want to write and explain that there is no connection whatever between the Bertillon system of identification and the fingerprint method, since the latter supplanted the use of the Bertillon system in law enforcement work. May I further advise that no two fingerprints have ever been found that are identical and mathematical computation indicates that such an event is impossible.

I feel that the public might gain an erroneous impression from the notation that there is a possibility of two fingerprints being alike and, inasmuch as there is no basis for such an assumption and since it might implant doubt as to the accuracy of fingerprint identification in the minds of our people, I felt that I should call this matter to your attention.

J. EDGAR HOOVER.

ORGANIZATION OF THE MATERNAL WELFARE GROUP IN ILLINOIS

To the Editor: The organization of the Maternal Welfare group in the state has been almost entirely completed so that now in every county of the state there is a representative. Many counties have proceeded with the county platform with much more zeal than others. This may be due to the hesitancy of physicians to foster an educational program. One cannot but wonder if the education of the public along newer and modern medical methods had been in the hands of the medical profession in the past that perhaps now we would be leaders in the field of medical education rather than having this duty performed by newspapers, radio and lay publications.

That inbred fear of advertising has held the physician bound to his routine duties and lay organizations have assumed leadership to such a degree that it is often difficult for members of the profession to even be considered, let alone assuming or being elected leaders.

Any new movement in the past few years has the fear of state control attached. Certain examples of the past clearly demonstrates that this fear is not unfounded. However, in the present program, strictly in the hands of organized medicine and with only the interest of the medical profession at heart, this stigma of state intervention may be banished. Illinois is fortunate indeed that through the alertness of the Council of the Medical Society the present Maternal Welfare Committee was appointed to direct activities along prenatal lines. There is now the very closest co-operation between the Public Health Department of the State and members of this group and their combined efforts are directed toward making the public and the physicians more "obstetrical minded."

Only because of the desire to get a definite program before the county societies and to demonstrate some effort on the part of physicians to cooperate in every way in reducing maternal and early infant mortality has this program assumed the present appearance of rapid action.

The present feeling among lay organizations generally is that if the medical profession does not attempt to do something toward reducing the hazards of childbirth, that they will attempt to do so through legislation. This is not as much of a threat as it is a subject of popular interest and appeal.

The very fact that the entire membership of the State Society may participate in the program should warrant close cooperation. There is no individual glory attached to this movement. Representatives of this Committee in each county are expected to act in such a capacity that only the combined efforts of the local society may become manifest to the public as an agent in attempting to teach the laity, that better conditions now exist for reduction of obstetrical catastrophies and it rests entirely with them the responsibility of availing themselves of these opportunities.

Dr. T. B. Williamson,
Chairman.
Dr. John F. Carey,
Secretary.

THE RELATION OF PHYSICIANS AND HOSPITALS

To the Editor: At this time when the medical profession is much concerned with the attempts of lay groups, cooperatives, insurance companies, associations, corporations and governmental agencies to take over various phases of the practice of medicine, this special Committee of the Adams County Medical Society appointed to study the relationship of physicians and hospitals, moves the adoption of the following principles to prevent similar relations between hospitals and physicians which are not in the best interests of public welfare.

"A. Community hospitals are civic enterprises, having a primary charitable motive, undertaken by philanthropic laymen who assume the financial obligation of providing place, equipment and personnel, and by philanthropic physicians who assume the obligation of providing medical care. Such a hospital is a joint enterprise to render aid to ill, indigent persons; the lay supporters contributing time and money as such, the medical supporters contributing time and money in the form of professional service.

"B. In order to provide hospitalization for the nonindigent such hospitals customarily maintain accommodation for the care of full-pay patients, as well as for the care of partial-pay patients,

who pay for this service according to their ability.

"C. In any of those types of hospitalization, however, the hospital as a corporation provides room, board, nursing and material, beyond which it has nothing to dispose of; at this point the medical staff enters the equation as the essential element to make the service of the hospital whole and effective.

"D. The Staff physicians' services are essential to the charitable purpose of the hospital and the acceptance of his appointment has a certain contract implication, viz., to perform gratuitously the professional service to make effective the hospitalization afforded gratuitously by the institution. A correlative implication of the contract should be that if the institution is recompensed for its service to the patient, the physician should be entitled to recompense in the same proportion, for if the hospital owes it to the supporting public to make the load of charity as light as possible, it owes the same duty to its supporting staff. Otherwise, the effect is that the lay supporters of the hospital are relieved of part of their burden, whereas the medical supporters bear the entire burden of their contribution.

"E. This contribution to the hospital enterprise is not offset by any advantage offered by the hospital connection to the staff physician. . . If it be said that the hospital lends prestige to the staff, it is much more true that the prestige of the hospital depends upon that of its staff.

"F. Hospitals should realize that the profession, through its central organization, the American Medical Association, has evolved certain 'principles of medical ethics,' outlining the duties of physicians to each other, to the professions at large and to the general public; that this code is the evolution of hundreds of years' experience being based on principles that are primarily for the good of the public in order that the profession can serve it most effectively. Since the profession is bound by these principles, hospital boards should study them carefully in order to better realize the physicians' viewpoint. (While hospitals have no general code of ethics, those prescribed for physicians have generally been interpreted as applying to hospitals. The connection between medical ethics and hospitals is also recognized in codes of ethics for state hospital associations and in the code of ethics for hospitals publicity of the American Hospital Association.) This should enable hospitals to correlate their service more adequately to cooperate with the profession to render better service to the public. One section of the 'principles of medical ethics' with which many hospital boards are apparently unacquainted states (Article 6, Section 4):

" 'It is unprofessional for a physician to dispose of his professional attainments or services to any lay body, organization, group or individual, by whatever name called, or however organized, under terms or conditions which permit a direct profit from the fees, salary or compensation received to accrue to the lay body or individual employing him. Such a procedure is beneath the dignity of professional practice, is unfair competition with the profession at large, is harmful alike to the profession of medicine and the welfare of the people, and is against sound public policy.'

"G. Hospitals being corporations, their management and policies are the proper prerogatives of their boards of directors. The organization of such boards commonly has overlooked the fact that there are two necessary factors—the services of laymen, as well as the services of physicians, to make the institution effective and the medical staff has usually not been represented. Failure to have the medical staff represented on the board of directors of hospitals has occasioned two undesirable results: 1. the appearance of policies prejudicial to the medical profession, because the influence and information obtainable from medical members has not been available; and 2. the development of the idea that the staff members are servants of the institution rather than essential partners.

"H. It follows that the medical profession to serve hospitals most efficiently for the best welfare of sick people, should have proper representation on hospital boards and that hospitals should recognize the profession as partners rather than servants of the institution. (It is suggested that not less than two members of the hospital staff, preferably chosen by the staff itself, serve on the hospital board.)"

In view of the above stated principles the following recommendations are made:

"1. That no hospital shall be permitted to engage in any form of contract practice with an individual, or group of individuals, for any

purpose other than the use of its physical facilities, materials and non-medical services such as room and board, use of the operating and delivery rooms, drugs and medicines, surgical dressings, appliances and general nursing care.

"2. That no hospital shall offer, for a price, any medical service.

"2A. That nothing in the foregoing shall be construed to indicate unethical conduct on the part of either hospital; to continue the present or similar arrangements with x-ray and laboratory specialists is concerned and also adopt a uniform fee schedule for the above specialties by both hospitals.

"2B. That both hospitals shall be on the same basis insofar as any financial arrangements with any insurance company are concerned.

"3. That in no case may a hospital charge a patient for other than the use of its physical facilities, materials and non-medical services.

"4. That emergency and accident patients may have first aid only, administered at the hospital, and the physician selected by the patient must be immediately notified. In no case shall a patient, able to pay, be admitted to the service of a staff member without the request of the patient's own physician, if there be one.

"5. That patients who are covered by compensation, health or accident insurance, cannot be considered as indigent.

"6. That none but strictly indigent patients shall be admitted to hospitals.

"7. That no patient, except in emergency, shall be admitted to the hospitals without a letter from a physician, local priest or pastor, welfare worker, or other reputable citizen, to be followed by adequate investigation by the social worker of the hospital, who shall be able to certify that the patient is known to be indigent.

"8. That patients who have been discharged shall not later be readmitted to a hospital, without certification that their present economic condition is the same as his previous admission.

"9. That, as a condition upon which members of the Adams County Medical Society may continue to serve on the staff of a hospital or dispensary, the institution shall be approved annually by the Adams County Medical Society with regard to its fair practices."

Unanimously approved with the recommendation that the Secretary of the Adams County Medical Society send a copy of same to the Sister Superior of St. Mary's Hospital, to the Superintendent of Blessing Hospital, to all the members of the Board of Trustees of Blessing Hospital, to all members of the Advisory Committee of St. Mary's Hospital, to the Council of the Illinois State Medical Society, and to the Editors of the ILLINOIS MEDCAL JOURNAL and the *Quincy Medical Bulletin.*

Signed:

ARTHUR H. BITTER,
Chairman.
WARREN PEARCE, M. D.
H. P. BEIRNE, M. D.
RALPH MCREYNOLDS, M. D.

EDUCATIONAL COMMITTEE

Report for April and May, 1938

ANNUAL MEETING

Prepared material for the Handbook of the Hall of Health.

650—Releases to papers re annual meeting.

1,000—Newspaper stories and letters sent to newspapers and principals and libraries announcing Hall of Health.

500—Programs announcing state meeting mimeographed and mailed to medical women in Illinois.

EXHIBITS

Presented exhibit at the Illinois State Dental Society Annual Meeting in Peoria, May, 1938.

Exhibit prepared for the National Recreation Congress held at the Sherman Hotel, Chicago.

Two exhibits prepared for the Marshall Field & Co. Annex Building—one on "Appendicitis," the other on "Hobbies and Health."

Exhibit prepared for "Hall of Health."

SPEAKERS' BUREAU

126—Programs requested by lay groups. Cooperated with agencies sponsoring YOUTH WEEK, Health Week, Mothers' Day, and Child Health Day, by arranging suitable health talks.

Secured speaker for the Annual Meeting of the Illinois Congress of Parents and Teachers in Quincy, Illinois, April.

RADIO

27—Radio programs given from Chicago stations. Copies of talks sent to Danville, Decatur and Bloomington for use over local stations.

Furnished material to Station WILL of the University of Illinois in connection with the broadcasts given by doctors of Champaign and Urbana.

SCIENTIFIC SERVICE

63—Speakers scheduled for scientific programs before county medical societies.

Assisted five Councilor Districts with their Maternal

Welfare Programs. Secured speakers and gave the following additional service.

304—Notices sent to doctors announcing 10th Councilor meeting.

245—Notices sent to doctors announcing 7th Councilor meeting.

321—Notices sent to doctors announcing 5th Councilor meeting.

303—Notices sent to doctors announcing 6th Councilor meeting.

322—Notices sent to doctors announcing 8th Councilor meeting.

682—Invitations sent to doctors announcing obstetric and pediatric programs sponsored by Vermilion and Champaign counties on May 5th and May 12th.

ASSISTANCE TO COUNTY MEDICAL SOCIETIES

In an effort to create interest and build up attendance, the Committee has assisted secretaries by sending announcements of their meetings to a large list of doctors. This type of assistance might become a burden, but because the results have been so very worth while, it seems wise to continue this help to county societies.

297—Notices for Effingham County.
148—Notices for Perry County.
151—Notices for Henry County.
300—Notices for LaSalle County.
200—Notices for Bureau County.
271—Notices for Franklin County.
470—Notices for Champaign County.
238—Notices for Ford and Iroquois Counties.

NEWSPAPER SERVICE

The following articles were written and approved: Physical Therapy, Hoarseness, Mothers' Day, Dizziness, Child Health, Summer Time Diet, Spring Time May Be Hay Fever Time, Your Baby, Rheumatism, Burns, Swat That Fly, Hobbies, Sunbathing.

1,990—Releases to newspapers using our regular health column.

960—Releases to Chicago and downstate libraries.

5,496—Releases to Home Advisers, W. P. A. Teachers, Health Chairmen, Schools, Red Cross, Y. M. C. A. and Y. W. C. A.

SPECIAL NEWSPAPER PUBLICITY GIVEN TO MEDICAL MEETINGS

80—Releases for St. Anthony Hospital, Rockford.
47—Releases for Henry County.
21—Releases for Franklin County.
48—Releases for Jefferson-Hamilton County.
42—Notices for Effingham County.
72—Releases for Bureau County.
76—Releases for Fulton County.
65—Releases for Champaign and Vermilion Counties.
4—Releases for North Shore Branch Chicago Medical Society.
50—Releases for 5th Councilor Maternal Welfare Meeting.
68—Releases for 7th Councilor Maternal Welfare Meeting.
48—Releases for Vermilion County Maternal Welfare Meeting.
60—Releases for Obstetric and Pediatric programs Champaign and Vermilion Counties.
126—Releases for Obstetric and Pediatric programs, Ford and Iroquois Counties.
72—Releases for Champaign County.

SPECIAL COOPERATION

The Home Bureaus of the State seem to be interested in promoting periodic health examinations. Leaders have requested hundreds of copies of the Illinois State Medical Society examination form.

Letters were sent to county society officers regarding the Summer Round-Up activity sponsored by the Illinois Congress of Parents and Teachers.

Moving picture films were secured for a number of lay organizations.

Many package libraries were furnished doctors and a number made up for high school and college students.

Announcements of medical programs in Chicago furnished the Chicago Community Forum Service for wide publicity.

Respectfully submitted,
JEAN MCARTHUR, Secretary.

UNITED STATES CIVIL SERVICE COMMISSION

Washington, D. C.

The Civil Service Commission expects to announce examinations on June 13 for nurse positions in the Indian Field Service (including Alaska), Department of the Interior. The examinations will cover three classes of positions:

PUBLIC HEALTH NURSE, $2,000 a year.

GRADUATE NURSE (General Staff Duty), $1,800 a year.

NURSE TECHNICIAN (Bacteriology and Roentgenology Combined), $1,800 a year.

There is especial need for persons *who are able to meet the requirements* for the positions of Public Health Nurse and Nurse Technician.

The announcement will show the requirements. Persons interested in such employment may obtain a copy of the announcement, as soon as issued, from the Secretary, Board of U. S. Civil Service Examiners, at any first- or second-class post office, or from the United States Civil Service Commission, Washington, D. C.

INFORMATION FOR DOCTORS IN BERLIN

There has been set up in the Kaiserin Friedrich-Haus, Berlin N W 7, Robert Koch-Platz 7, an information bureau which will be able to give doctors every kind of information. The office is semi-official and gives advice impartially and free of charge. It would be to the advantage of every doctor to get into touch, before or after his arrival in Berlin, with the Kaiserin Friedrich-Haus, so as to save time and make the most of his stay.

MORE DIABETES

Although relatively easy to diagnose and control, diabetes was responsible for a sharp increase in mortality last year in Illinois. Particularly significant was the higher death rate among people less than sixty years of age. The number of deaths among all ages in the State went up from 1,997 in 1935 to 2,293 in 1936. Among people less than sixty, the number of fatalities went up from 655 to 731.

This is discouraging since diabetes can be so readily controlled. Self-discipline with respect to diet, exercise and the use of insulin is the principal requirement. Habits and practice in relation to these things must, of course, be based upon an accurate knowledge of the diabetic condition. This, however, can be ascertained through medical examination and study.

Diabetes can be well controlled in some patients through a strict regulation of diet and exercise alone. Others require insulin. The amount and variety of food that may be consumed safely depends upon the condition of the diabetic and the amount of exercise which he is able to take. Experimentation under the guidance of a physician after diagnosis has been established will reveal accurately the tolerance of a patient and whether or not insulin is required. Frequent tests of the urine for sugar, which a patient can learn and do easily, will keep a diabetic informed with respect to his success or failure in controlling the disease.

It is estimated that there are about 30,000 diabetics in Illinois. About two-thirds are women and a majority are over forty years of age. Overeating brings on the disease, makes it worse and leads to diabetic coma, according to Joslin. "Hence" says this eminent authority on diabetes "in the treatment of the disease overeating must be avoided at all cost."

Periodic medical examinations after forty is a good way to detect diabetes before serious symptoms develop. Detected early the disease can be controlled in many cases without resorting to insulin.—Illinois Health Register.

TREATMENT OF LEFT VENTRICULAR FAILURE

Fred M. Smith, Iowa City (*Journal A. M. A.*, Aug. 28, 1937), declares that left ventricular failure characterized by the occurrence of paroxysmal dyspnea is a common form of cardiac disability. The treatment is concerned with the control of the paroxysmal dyspnea and the subsequent restoration of the cardiac function to the maximum efficiency. Ordinarily the attacks are readily abolished by the measures generally employed in the treatment of cardiac failure. The more severe form, however, is a major cardiac emergency and demands prompt and energetic treatment. In the consideration of the treatment it is important to bear in mind the following aspects of the condition: (1. An inadequate coronary circulation is commonly a prominent factor in the production of the cardiac disability. 2. Insufficiency of the left ventricle results in pulmonary congestion. 3. With the progression of the cardiac disability and the maintenance of a disproportion between the efficiency of the left and right ventricles, a stage is finally reached which permits the occurrence of paroxysmal dyspnea. 4. The attacks are precipitated by factors that impose excess demands on the left ventricle. The onset in the more severe form often intensifies the exciting agent and initiates other factors, which promote the pulmonary congestion, and thus a vicious cycle may be produced.

THE CHEMISTRY OF THIAMIN (VITAMIN B_1)

In an endeavor to promote the adoption of a universally acceptable term for vitamin B_1, based on the chemistry of the substance, Robert R. Williams, New York (*Journal A. M. A.*, March 5, 1938), has proposed "thiamin" (chloride, bromide, sulfate and so on) pending action of the Conference on Vitamin Standardization. The greater part of the labor which has been expended on the chemistry of this substance had to do with its isolation. Once a few grams of the vitamin became available, its structure was fully established in three years and its synthesis followed almost immediately. The biochemistry of thiamin, biochemical lesion in thiamin deficiency and the methods of its assay and distribution in foods are discussed. The therapeutic response to thiamin remains the most trustworthy diagnostic test. The diagnostic value of thiamin therapy is largely lost if crude natural preparations are used both because of the uncertainty of their standardization and of the presence of other vitamins which may be responsible for the observed effects. After demonstrating a B_1 deficiency and rectifying the immediate shortage, the physician should endeavor to direct the diet of the patient toward a more adequate supply of the vitamin. In the long run one should look to the grocery store rather than the drug store for a normal intake.

SOME OF THE MILESTONES PASSED IN THE MARCH OF MEDICINE DURING THE PAST DECADE

Pernicious Anemia

Yesteryear—A few short years ago a patient with pernicious anemia was doomed to a lingering death.

Today—Now this condition is effectively treated with liver, liver extracts or ventriculin.

Addison's Disease

Yesteryear—Patients suffering from Addison's disease were considered hopeless.

Today—Now when cortin, an extract from the adrenal cortex, is used in conjunction with his salt intake, there is a noticeable improvement in a few hours, and the road to recovery is reached in three to five days.

Erysipelas

Yesteryear—No specific treatment.

Today — Now erysipelas antitoxin commonly employed. Successful treatment with ultraviolet ray instituted.

Original Articles

INTER RESPONSIBILITIES OF THE MEDICAL PROFESSION, SOCIETY, INDUSTRY AND GOVERNMENT

R. K. PACKARD, M.D.
CHICAGO

There are many problems confronting the American people today, and there seems to be little unanimity of opinion regarding their solution. We might all agree that their solution cannot be consummated through any single agency, but rather through cooperation of our various agencies of society, rather than through any coercive movement. It seems quite evident that all agencies are unwilling to admit frankly the mistakes they have made or are making and start a new program, but rather insistent upon throwing bricks at each other. Thus we find Government blaming Industry—Industry blaming Government—Society blaming one and then the other, and the Medical Profession sometimes being attacked by all three. That there are certain responsibilities existing must be assumed, and I briefly desire to discuss with you what I think a few of these responsibilities are.

RESPONSIBILITY OF THE MEDICAL PROFESSION TO SOCIETY AS A WHOLE

1. To make available adequate medical care for the American people by continuing the high standards of medical education and high standards of hospitals, their personnel and staff, continued individual and institutional research, post-graduate medical education in the larger centers and by refresher courses carried to the various points of medical practice.

2. Cooperation with the United States Public Health Service, the State Department of Public Welfare and local Boards of Health in the prevention of disease, and improvement of sanitation, quarantines and such other matters as rightfully come under the jurisdiction of those departments, that add to the safeguarding of Public Health.

3. To keep society informed regarding the progress of medicine and also regarding fake cures and patent medicines that are advertised through various publications and over the radio.

4. To admit that there are many problems regarding medical care existing at the present time and to assume definite leadership in studies and surveys that will determine such problems and then proceed with all other agencies in their correction as near as is possible in a continuous changing society.

RESPONSIBILITY OF SOCIETY TO THE MEDICAL PROFESSION

1. We believe that experience has shown that while the present practice of medicine in the United States is not perfect, it is superior to the new experiments in other countries dealing with various forms of Insurance Medicine, and Socialized Medicine, and if society desires to maintain and improve the present system then society must assume the responsibility of not allowing political maneuvers to change materially the system. Society must not accept false promises.

2. If society desires continued research work it must cooperate in the following ways:

A. It must not allow Anti-Vivisectionists to take control of that part of research work in which animal experimentation plays such an important role.

B. It must keep research work under individual and institutional management and not allow it in any way to be influenced by political appointments or control.

3. If society desires to maintain the high standards of medical education which is the fundamental background of adequate medical care and to maintain the high caliber of young men entering medical school at the present time, then society must assume some responsibility, for not allowing this high standard to disintegrate as it has in many foreign countries.

RESPONSIBILITY OF THE MEDICAL PROFESSION TO INDUSTRY

1. I believe the medical profession has always realized the fact, that under what we term the capitalistic system, there will always be various types of income groups, all requiring the same type and skill as regards medical care, and the medical profession has always assumed the responsibility of furnishing them medical care on the basis of their ability to pay. That there has been an occasional deviation from this principle cannot be denied but on a whole it has been the exception rather than the rule. Some

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members of the medical profession and some few outside of the profession have raised the question, Why should the doctor cut his bill for services rendered when the landlord, merchant et al., do not do so? The answer to this question seems very simple, there is but one standard of medical care while there are various types of shelter, food and clothing, that at least answer the purpose for which they are intended, but one does not reasonably expect that there should be a different procedure in the treatment of acute appendicitis in the low and high income groups, and therefore the charges must remain on the ability to pay rather than on the type of service rendered.

2. The medical profession should cooperate with industry and capital to render the best possible care to the injured employee. Members of the medical profession, in cases of dispute, should testify for or against the employee or employer, only on a strictly impartial basis. Employees and employers should both be protected. Again in civil cases arising from injuries the medical profession should assume responsibility of rendering testimony on the basis as above stated. That there have been abuses on the part of both parties cannot be denied and such abuses have resulted in a loss of confidence on the part of all concerned including society as a whole.

RESPONSIBILITY OF INDUSTRY AND CAPITAL TO THE MEDICAL PROFESSION

1. Industries carrying their own compensation or covered by Insurance Companies should not seek medical services at a reduced cost below the standard fees for the community in which such service is rendered. This also should apply to hospital expenses, inasmuch as this is a cost in the production and distribution of products, and should be charged to such costs, and competition should not be sought in asking physicians and hospitals for reduced rates for services rendered.

2. If the capitalist system is to remain in a democratic form of government, then it seems obvious that capital and industry cannot escape their responsibility in the matter of assuming a larger responsibility to their employees. They cannot hope to retain a system that pays such a low wage that a large percentage of the people cannot afford to pay reasonable charges for adequate medical care. If there is to be an independency of capital there must of necessity be some independency of labor. In recent years some members of the capital group have said that the cost of medical care was too high, that it was beyond a large majority of peoples' ability to pay. This gained considerable momentum during the prosperous era of 1920 to 1930. Some went so far as to say that there should be little or no profit accruing to medical profession for services rendered. It would seem obvious that if capital really believed such to be true, then society as a whole and the medical profession could likewise say, that no individual has the right to profit or income, commensurate with his skill and initiative. I think that management must change this attitude if it desires to preserve individuality in any of the branches of our social state. I am willing to admit that individuals receiving a wage of $12.00 to $15.00 a week cannot afford adequate medical care for any serious illness, but management must not lay this at the door of the high cost of medical care, but admit that it is the failure of management to pay an adequate wage. If management could not pay a wage during the period of great prosperity from 1920 to 1929 that enabled the vast majority of labor to have adequate medical care then it seems obvious that the system is not adequate for the American people. This, however, I do not believe. If one reviews during this period the large stock dividends and cash dividends which were passed out by management, one can readily assume that such actions of management had much to do with the wild speculation of that period. If on the other hand management had used a portion of this surplus to increase payrolls that would have provided sufficient income for adequate medical care, it would have had much to do with preventing wild speculations which eventually engulfed both capital and labor. I do not desire to infer that I do not believe in the capitalistic system because I am firmly convinced, that if we are to survive our present difficulties, it must be under this system. I am equally convinced that better management must come into being if we are to survive. I am also convinced that we need better government than we are having at the present time, and so we might say that both government and management must change if we hope to survive. Labor constitutes the

only real wealth because natural resources and huge factories produce wealth, only through labor. Management must not say that we will give you employment when business is good and use our excess profits for distribution in stock dividends and cash dividends and then when business is bad, we will relinquish all our responsibility to labor during that time. A great majority of the medical profession do not believe that government should run any business, because as a profession we recognize the study of case histories and derive our methods of management through such study, and if we were to take the case records of world history, we will find that in every instance where government has assumed the control of society and capital, it has ended in disaster for the government, for capital and industry and eventually for the people. Therefore the responsibility of capital to the medical profession is an indirect responsibility in assuming a greater responsibility to labor in the form of better long run management, that realizes that its life depends on its ability to furnish steady employment at an adequate wage.

RESPONSIBILITY OF THE MEDICAL PROFESSION TO THE GOVERNMENT

1. The medical profession appreciates the fact that government not only has the right to, but should be primarily interested in the health of its people, therefore if the medical profession desires to retain its identity in its present form it must cooperate with government in the furnishing of adequate medical care to individuals who because of their inability to work, the lack of employment and indigency, are not able to pay for medical service. There will always exist these three types of individuals. The medical profession cannot be expected to render adequate medical services to the large number in this group without remuneration, but the profession should cooperate with governmental agencies in plans that do render adequate medical service at the lowest possible cost commensurate with such service. The medical society should act as the policeman of its own members in the rendering of adequate service and in the matter of keeping the costs of such service as low as possible, consistent with proper care.

2. Inasmuch as the health of the people has become a national issue, occupying much space in the public press, being debated in our public and private schools, and finding its way into political discussions, it seems obvious that the medical profession should conduct a national study, comprehensive in its scope, dealing with all phases of the subject, and furnish such a report to the various agencies interested in facts regarding problems of health and disease, the facilities available for proper care and prevention, and how adequately these facilities are being used. Such a survey is now being made in the United States, and the Illinois State Medical Society has already started work on this survey.

RESPONSIBILITY OF GOVERNMENT TO THE MEDICAL PROFESSION

1. Statesmen and politicians should recognize the fact that medicine has made great progress in the last fifty years under our present system of education, research, practice and prevention, and that all of our great discoveries have been passed on to the public without individual profit or commercial exploitation. They should realize that those who cry about "The High Cost of Medical Care" and "Money Mad Doctors" have no such record to point to. They should realize that that portion of the public press that advocates some form of socialized medicine in one column and pleads for the liberty of the press in the other, cannot be thinking in terms of full liberty. They should realize that those who advocate the capitalistic system for one branch and socialization for another, cannot have a true conception of democracy for all the people. The first responsibility of the government is to cooperate with the medical profession in whatever changes seem necessary to render a more adequate medical service. The second responsibility of government is not to use public health as a means of gaining votes for any political party unless they can demonstrate without question that the progress of medicine and its application to medical needs is declining.

The third responsibility of government to the medical profession, society, and industry, is to cooperate with the medical profession in the care of the indigent because of unemployment, the care of indigent because of inability to work or due to age or physical handicaps, and those in

the low income group who because of the high incidence of illness in a given period of time, are unable to afford adequate medical care. Government, including Federal, State and local should cooperate with the local county medical societies and other agencies in establishing a program for the care of the above classes. The first principle involved should be that of free choice of physician; second, a certain proportion of funds allocated for relief purposes should be for medical care. Such a plan is pliable because it fluctuates with the relief load, and if the free choice of physician is applied, no special machinery need be set up to add to medical expense. Third, medical relief alone should receive consideration for that portion of the low income group that are able to provide for themselves aside from medical care. Until management of capital and industry can pay a sustaining wage, they will face the necessity of some form of taxation upon themselves and society as a whole to defray the expenses of the care of indigency as relates to food, shelter, clothing and medical care. Even with a sustaining wage a large number of people will not provide a surplus for medical care for periods of unemployment or for old age. Thus it would seem that management has to create some form of retirement income and unemployment income or government has to assume such responsibility until such time as the American people are willing to assume more of their own responsibility than they seem to at the present time.

In summarizing the responsibilities, it would seem that they can only be solved by cooperation between the various branches of our social structure, and that we must solve them all on the basis that any lasting solution must be based on our present system of a democratic form of government, retaining our capitalistic system, freedom of individual initiative, freedom of the press, and the retention of our present system of medical care.

In every branch that we as individuals happen to be associated with, let us realize that we are not perfect, let us study our own problems, confess our own mistakes, clean our own house if need be, and above all, say that we are going to maintain a high standard of ethics for our own management.

THE CAUSE OF CANCER

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Three topics will be discussed: 1. Theories of the cause of tumors, 2. clinical investigations of the cause of cancer, 3. experimental investigations of the cause of cancer.

THEORIES OF THE CAUSE OF TUMORS

Theory of Embryonal Cell Rests. Influenced by Virchow, Remak and others, Cohnheim suggested that certain misplaced groups of embryonal cells formed the starting point of tumors.

He attributed the start of a neoplasm chiefly to a change in the blood supply to the part. This theory accounts in some degree for the site and structure of certain tumors. It does not explain, however, why the embryonal cells automatically continue to multiply nor why a tumor and not a normal structure is formed.

Theory of Tissue Tension. Abandoning the view that the tumor cells must be embryonal, Ribbert[1] suggested that adult cells also have sufficient regenerative powers to produce tumors.

He believed that if cells are removed from the influence of "tissue tension" by which they are normally kept in place, a tumor might result from the overgrowth of the dominant tissue.

Neither Cohnheim's nor Ribbert's theory explains the fundamental reason for tumor growth.

Theory of Cell Autonomy. This theory implies that the cause of tumors—benign or malignant—lies wholly or chiefly in the cell itself.

But just as we do not know the cause of the life processes of cells—why they have the properties of motion, nutrition, function and reproduction—so we are ignorant of why a cell suddenly devotes its energies to lawless, uncontrolled multiplication and forms a tumor.

According to this theory, some change takes place in the cell which alters its behavior.

The theory of cell autonomy has received a good deal of support from experimental investigations on the lower animals with carcinogenic agents. Some of these experiments will be described later.

Microbic Theory of Cancer. While few have believed that benign tumors are due to microbes, many have held the theory of the microbic origin of cancer. Bacteria, coccidia, protozoa, spirochaete, mycetozoa, and blastomycetes have been found in cancerous tissue by different workers.

In some instances it has been claimed that the organism found has been grown in pure culture and has produced the disease when injected into an animal.

Three problems may be briefly discussed. First, does the organism found cause the tumor; or second does it merely occur in the tumor as an accidental circumstances; third, does some undiscovered, perhaps ultramicroscopic microbe, living in symbiosis with the cancer cell cause the growth?

Organisms Found in Cancer. In a few special instances, an organism has been discovered which pathologists agree is the cause of the cancerous process in which it is found.

In rats, Fibiger[2] demonstrated that a nematode worm may cause gastric carcinoma. These investigations will be described later.

In man, the ova of Bilharzia hematobia may cause chronic irritation of the bladder wall resulting in carcinoma. In these and a few other special instances the evidence is convincing that the microorganisms described are the actual agents causing the tumor.

In the main, however, the claims for various organisms as causal agents of tumors have not been confirmed.

Accidental Inclusions. Ewing[3] has frequently found trichinae in cancerous tongues.

Lycopodium seeds, derived from the surgical dressings, have been observed engulfed in the cells in cancerous breast tissue. Due to phagocytosis, many other intracellular bodies—cork cells, particles of pigment, microorganisms of various kinds—have been found. Most of the microorganisms and all of the foreign bodies found in cancerous tissue are usually regarded as accidental inclusions because of the lack of convincing evidence that they bear a causal relation to the tumor.

The so-called "bird's eye" inclusions in cancer cells once regarded as parasitic organisms are now believed to be due to changes in the secretions of the cell or in its centrosomes.

Ultramicroscopic Organisms. Against the theory that cancer in general is due to some undiscovered, perhaps ultramicroscopic microbe, several arguments may be made.

It is the universal experience that cancer is not contracted by those who come in contact with it.

Physicians (Alibert, Wickham and others) who have attempted to inoculate themselves with cancerous tissue have failed.[4]

One of the most striking differences between cancer and any known infection due to a microbe is shown by the difference between an embolus of cancer cells and one from an infection such as tuberculosis.

If a cancer of the lip metastasizes to the lungs, the new cancer focus as it develops is not made up of lung tissue but of cells identical with those of the primary tumor.

A new tubercular focus is composed of cells of the tissue in which the bacilli lodge.

When one considers that such widely different factors as a biologic agent (nematode worm), a chemical agent (tar), and an actinic agent (x-rays), may set in motion the process we call cancerous, the conclusion seems inevitable that there can be no single universal cause of cancer such as a hypothetical microbe.

At the present time, pathologic opinion is strongly against the theory of a universal cancer parasite. The parasite of the cancerous process is probably the cancer cell itself.

CLINICAL INVESTIGATIONS

In the clinical investigation of the cause of cancer two groups of factors may be considered—intrinsic and extrinsic.

Intrinsic Factors. These include age, sex, heredity and groups of conditions conveniently called precancerous.

Age. Carcinoma appears as a rule in those past 35 or 40; sarcoma in those much younger.

Sex. Malignancy occurs more often in females due probably to the frequency of carcinoma of the uterus and breast.

Heredity. Ewing[5] says: "Nothing about cancer is more generally accepted than its hereditary nature and nothing is less satisfactorily proved."

There are numerous records of so-called cancer families. Broca[6] mentions a family of 26 individuals in three generations; 16 died of cancer.

Other authors have described similar families such as the family of Napoleon Bonaparte. Identical tumors in the brain of identical twins have been observed.

It has been held that a "general blastoma constitution" or "cancer susceptibility" exists in cancer families. This means practically that the same exciting agent may be effective in some individuals, but not in others, because of the exist-

ence of a type of cell susceptible to extrinsic carcinogenic agents.

This belief receives support from the fact that in the production of experimental cancer only a certain percentage of a group of animals is susceptible to carcinogenic agents.

Most pathologists doubt that heredity plays an important part in the majority of tumors in human beings.

Ewing[7] says that, as a rule, "hereditary susceptibility to tumors is negligible and the disease does not develop until other factors, which are the real cause of the disease, are brought into play."

Maud Slye's experiments on the influence of heredity in animal tumors will be mentioned later.

Precancerous Conditions. The term precancerous is not altogether a happy one. It is useful, however, as indicating a benign condition or lesion which frequently but by no means necessarily develops carcinomatous changes.

May cancer arise in a normal area or is it always preceded by some tissue change? Both possibilities are usually admitted. So-called precancerous conditions may consist of—

1. Chronic inflammatory changes. Billroth[8] said: "Without previous chronic inflammation cancer does not exist"; and Ewing[8] remarks that this dictum, "while subject to exceptions is yet so generally true as to establish the great significance of chronic irritation in tumor genesis."

Almost innumerable examples of the association of chronic inflammation and cancer could be given.

In the skin, mouth and certain other organs, cancer is often preceded by a long history of chronic irritation due to extrinsic agents.

2. Hypertrophy of certain organs, as of the prostate, which may long precede cancer.

3. Physiologic involution of organs, as of the breast, which often precedes cancer.

Involution may be associated with inflammatory conditions, such as "chronic mastitis" in the breast. It is not yet settled whether chronic mastitis is to be regarded as a precancerous condition or merely as one frequently associated with but bearing no direct relation to carcinoma.

4. Benign tumors. Transformation of benign into malignant tumors may occur in some organs.

So-called benign papillomas of the stomach, colon, bladder, etc., may become cancerous. It is possible that some of these tumors are malignant from the start and merely begin to develop more actively at certain periods.

In the breast, carcinoma is much more likely to develop from the epithelium, which lines the ducts or acini, than from a pre-existing tumor such as a fibroadenoma.

In the skin a variety of lesions, including certain tumors, such as sebaceous cysts and nevi, may precede cancer.

Extrinsic Factors. These may consist of 1. biologic, 2. mechanical, 3. chemical, 4. thermal or 5. actinic agents, acting singly or in combination. Perhaps the term "radiation agents" would be preferable to "actinic agents."

Practically all of these factors may be classed as chronic irritants to the tissues.

Biologic Agents. The effect of microrganisms and their toxins is only surmised. These factors are of importance in causing chronic inflammations which so frequently precede cancer. It has been noted for example that cancer of the skin has developed around a sinus due to a suppurating discharge from chronic osteomyelitis.

Trauma. Traumatism to the tissues may be single or repeated, i. e., acute or chronic as to time.

Acute Trauma. Can a single trauma excite a malignant tumor? This question is of great importance from a medico-legal point of view.

In the skin, cancer has been said to follow the bite of an animal or the sting of an insect. We have seen carcinoma of the palm in a physician follow an injury from a burn with a match. It was said that the injury never completely healed.

Slye[9] has reported a number of instances in which a single trauma, as by a bite or cage injury, was followed by a tumor in laboratory mice. These mice, however, were highly inbred and the same conditions do not obtain in human beings.

Ewing[10] has given five essential criteria which must be established in order to prove beyond reasonable doubt that a single injury caused a given tumor.

It must be shown that:

1. The wounded part was previously normal. It is difficult or impossible to prove this in most instances.

2. The tumor arose at the point of injury.

3. The traumatism was actually inflicted and caused damage to the tissues.

4. A reasonable time limit elapsed between the injury and the appearance of the tumor.

Opinions differ as to what constitutes a reason-

able time limit. Three or four weeks may intervene between the injury and the appearance of the tumor. A much longer interval allows other factors to enter in.

If it can be shown that a wound produced by traumatism to the normal area never healed and was succeeded by the tumor, the presumption is strong in favor of a causal relationship.

5. The lesion is a tumor as shown by the microscope and of a type that might follow disturbed regenerative processes.

In spite of some evidence in favor of the belief that a single injury can cause a malignant tumor the general experience of physicians is against this view.

Recognized Effects of Acute Trauma. Acute trauma may probably be a contributing factor to tumor origin as when an area previously inflamed or otherwise abnormal is subjected to injury.

Traumatism to a tumor already present may undoubtedly cause increased local growth and also favor metastasis by opening up lymph and blood channels.

Traumatized tissue is probably more likely than normal tissue to harbor and favor the development of circulating tumor emboli.

Each case, in which the relation of acute trauma to tumor origin is under discussion, must be decided on its own merits in accordance with the facts that can be determined.

Chronic Trauma. Chronic traumatism, i. e., a slight injury frequently repeated, is well recognized as being a cause of tissue changes which may result in cancer.

In the mouth a sharp tooth or poorly fitting dental plate may cause chronic traumatism and cancer may result.

A combination of chronic traumatism and other factors is probably necessary, however, to produce cancer.

Chemical Agents. These may act 1. directly on the skin by contact or 2. indirectly on the skin or other tissues by gaining access to the body through inhalation, ingestion, or inunction.

Skin Contact. Percival Pott,[11] in 1775, showed that chimney sweep's cancer of the scrotum was apparently due to the irritation of soot.

Volkmann,[12] in 1875, described tar cancer in the lignite workers of Saxony.

Between 1876 and 1925, 539 cases of cancer of the skin were reported in England in cotton mule spinners.

The tumor was situated usually on the scrotum and adjacent groin and was apparently due to chemical irritation from lubricating oil.

The first clinical sign was a warty nodule, which ulcerated, healed and finally became cancerous.

Workers in anthracene, creosote, lamp black, paraffine, shale oil, soot, tar and many other chemicals may develop skin cancer of the exposed area.

Arsenical cancer of the skin has been noted rarely in copper smelters, handlers of arsenical sheep dip, etc.

EFFECTS FROM INTRODUCTION OF CHEMICAL AGENTS INTO THE BODY

Inhalation. It has been shown by Campbell[13] that the inhalation of dust from tarred roads produces an incidence of adenoma of the lungs in mice 10 times as great as that of the controls.

It has been thought that carcinoma of the lungs believed by some to be on the increase in human beings, may be due to inhalation of air contaminated with gasoline products and dust from roads treated with tar.

In 1895, Rehn[14] reported three cases of cancer of the bladder in aniline workers in Germany. Since that time many other cases have been reported.

Formerly the cancer was believed to be due to the excretion of the chemical in the urine. Examination of the urine has shown no dye, however, and the tumor develops underneath an intact mucosa. It is believed, therefore, that the chemical acts through the blood stream. It is thought the dye gains access to the body through the respiratory system.

Ingestion. Skin cancer has been observed rather commonly from the ingestion of arsenic. Inorganic arsenic given for long periods in psoriasis and other diseases in the form of Fowler's solution or Asiatic pills is more often responsible for skin cancer than the inorganic compounds. Arsenic granules have been demonstrated in the skin lesions which consist of pigmentations, keratoses, especially of the palms and soles, and epitheliomas.

Inunction. Janssen[15] has reported the occurrence of cancer of the bladder in patients treated with tar for psoriasis over long periods. It cannot be regarded as certain, however, that the tar gaining access to the body is responsible for the development of carcinoma.

THERMAL AGENTS

These act on the skin or mucous membrane by direct contact or exposure.

Local irritation may result from long continued exposure to the heat from tobacco pipe stems, charcoal pans, used in India for warming the body, molten iron in foundries, the sun's rays, etc.

Chronic inflammation and scars may be produced which may terminate in skin cancer.

ACTINIC AGENTS

Actinic agents may act 1. directly on the skin or 2. by gaining access to the body by inhalation or ingestion. Hoffman[16] has given an invaluable review of the subject with many references to which the writer is greatly indebted.

Skin Contact or Exposure. X-rays and radium rays may cause dermatitis, burns, scars, keratoses and ulcerations of the skin resulting sometimes in "radiation cancer." The sun's actinic rays may cause similar effects.

Inhalation. It has been known for centuries that miners of cobalt, nickel, bismuth and arsenic in Joachimsthal and Schneeberg often developed a disease of the lungs which terminated fatally.

In 1879, Harting and Hesse[17] showed that these miners frequently had a malignant tumor of the lungs.

In recent years, it has been found that inhalation of the gas radon which contaminates the air in certain mines may result in the formation of the "active deposit" on the lining of the lungs. The solid active deposit may then be absorbed by the blood and settle in various organs especially the dense outer cortex of the bones.

Cancer of the lung and osteosarcoma of the bones may thus apparently result from the constant bombardment of these structures by the rays from the "active deposit."

Arsenic has not been found in the lungs of these patients, a negative argument in favor of radium being the harmful agent.

Ingestion. Radio active paint is made by mixing crystalline phosphorescent zinc sulphide with a minute quantity of insoluble radium, mesothorium or radiothorium sulphate.

Since about 1917, this paint has been used extensively in certain factories in the United States for painting and thus making luminous the dial figures and hands of watches.

It was found that employees, usually girls, were in the habit, in spite of warnings, of "pointing" the paint brushes with their lips. Small amounts of "paint" were probably absorbed by the mucous membrane of the mouth while some was swallowed.

Most of the paint absorbed and ingested was eliminated by the bowel—some was stored in the bones.

Two types of "radium poisoning" developed. One type in which death occurred soon after exposure, showed necrosis of the jaw bone and leucopenic anemia.

The other type, resulting in death after a number of years, showed osteogenic sarcoma developing at the site of a chronic osteitis.

Bodies of those who died were subjected to chemical analysis, which disclosed that they contained from 10 to 180 micrograms of radium, concentrated largely in the bones.

Up to May, 1931, among 800 girls employed at various times between 1917 and 1924, there were 18 deaths believed to be due to "radium poisoning." 30 others who were still alive showed evidence of radio activity.

In the living patients, a certain mortality from "radium poisoning" was anticipated.

In spite of all precautions, including the use of mechanical devices for applying the "paint" employees in these factories still become radio active, showing an average of ½ microgram of radium in the body, a quantity regarded as being hazardous to health.

It is perhaps needless to point out that there is no danger of "radium poisoning" in the therapeutic use of radium.

"Radium poisoning" is due entirely to the presence in the body of radium itself which bombards the tissues from within.

In radium treatment, the tissues are bombarded with radium rays from without. As soon as the radium is removed there can be no further effects except those due to the action of the rays, which have been used and withdrawn.

EXPERIMENTAL INVESTIGATIONS

Experiments on the lower animals have been done 1. to determine the influence of heredity, 2. to discover carcinogenic agents and their effects.

HEREDITY

Maud Slye's[18] experimental work on heredity of tumors in animals is notable.

She has proved that "inbreeding of tumor bearing animals greatly increases the incidence

of tumors." She terms hereditary cancer susceptibility "the absence of a mechanism fitted to control proliferation and differentiation in regenerative processes."

Mice exhibit not merely a general susceptibility but a definite tissue susceptibility. Mice developing skin cancer transmit it to their offspring; the same tendency holds true in cancer of the breast.

In human beings, even if we assume the existence of "hereditary susceptibility" or a "general blastoma condition" an extrinsic factor is probably necessary to start the cancerous process.

Carcinogenic Agents. In recent years a vast number of experiments have been done on the lower animals with biologic, chemical and actinic agents some of which have been found to be cancer-inducing. Only a few of these experiments can be mentioned.

Biologic Agents. In 1912, Johannes Fibiger,[2] Danish pathologist, having discovered the remains of a nematode worm (named by him—spiroptera neoplastica) in a gastric carcinoma of the rat, carried out a series of experiments.

Finding that certain cockroaches were infested with this worm, he fed them to a series of rats. 12 out of 62 rats which lived over 60 days developed gastric carcinoma which usually contained the worms and ova.

In 2 rats lung metastases were found which were free of worms and ova.

For his work on the cause of cancer, Fibiger received the Nobel Prize.

This notable study demonstrated the dependence of a gastric carcinoma on chronic irritation due to an animal parasite. It also demonstrated that the epithelial cells retained the power of "uncontrolled multiplication" characteristic of carcinoma even after the original irritant disappeared.

Chemical Agents. In 1915, Yamagiwa and Itchikawa,[19] Japanese scientists, produced metastasizing cancer in rabbits ears by painting them with coal tar over periods of 55 to 360 days. These experiments have been repeated in many different laboratories.

Kennaway[20] and his colleagues isolated from coal tar dibenzanthracene which is the carcinogenic agent, coal tar being inert when this substance is removed. Kennaway has also produced synthetic dibenzanthracene which is highly carcinogenic. Andervont[21] has given an invaluable resumé of this subject.

Since 1930, more than 45 different chemical compounds have been discovered most of them hydrocarbons which will produce tumors in experimental animals.

These substances are closely related chemically. Up to the present time, however, no definite chemical structure has been discovered which can be regarded as cancer-inducing.

Production of Other Experimental Tumors with Chemical Agents. Some of the carcinogenic chemicals act as irritants; others may produce cancer without concomitant irritation. Depending partly on the method of application, malignant tumors of different types and in different sites may be produced. Applied to the skin, epithelioma of the skin may be caused. Injected subcutaneously epithelioma or sarcoma may be produced at the site of injection.

Subcutaneous injections of lard solutions of 1, 2, 5, 6, dibenzanthracene may produce in some mice pulmonary tumors which may appear earlier than the subcutaneous tumors.

Thus it has been found that a chemical agent may cause tumors in internal organs at a distance from the site of injection by gaining access to the circulation.

Persistance of Cell Multiplication. If lard solutions of 1, 2, 5, 6, dibenzanthracene are injected into mice some of the chemical persists in the resulting tumor and may be detected 6 or 8 months later.

In transplants of the 5th and 6th generation of these tumors, the chemical is absent. Thus it is shown as already demonstrated by Fibiger's experiments with the nematode worm, that the cells may retain the power of independent multiplication even after the original irritant disappears.

Cause of Persistance of Cell Multiplication. Why do cells continue to multiply after the original irritant disappears?

Drew[22] cultivated tumor cells in addition to normal embryonic and adult cells, such as kidney epithelium in rats, *in vitro*. While tumor cells, and normal embryonic cells, upon being placed in a suitable medium, started to multiply at once, normal adult cells were delayed in their growth for from 10 to 14 days.

By adding the filtered extract of adult kidney or liver tissue which had been autolyzed for 2 hours at 37 degrees centigrade, this lag in growth was abolished. A cold extract of these tissues was not effective in abolishing the lag, indicating that when autolysis was absent, activating substances were not produced.

A cold extract of mouse carcinoma cells was even more effective than autolyzed normal tissue cells in abolishing the lag. One may infer that tumor cells in their growth produce activating substances which incite proliferation of the surrounding cells. The process of cell multiplication thus becomes automatic.

Similarity of Hydrocarbons and Biologic Substances. Kennaway and Cook[20] isolated a substance from the bile acids which was very similar in chemical structure to dibenzanthracene. They succeeded in producing a slight chemical change in this substance which made it more highly carcinogenic than dibenzanthracene itself.

As there is a close chemical similarity between the carcinogenic hydrocarbons and bile, hormones and vitamins, it has been suggested that some of these biologic substances may undergo a chemical change in the body which makes them carcinogenic.

In recent years interesting facts have been brought to light bearing on the development of cancer of the breast. Thus, in castrated male rats, Lacassagne[23] produced cancer of the breast by injections of theelin (female sex hormone) which differs only slightly in chemical structure from the carcinogenic hydrocarbons.

Halsey J. Bagg[24] carried out the following experiments:

A strain of mice was bred and the young were at once removed to prevent suckling. The mothers were immediately impregnated and the young were again removed. After 5 or 6 pregnancies the incidence of cancer of the breast in the mothers was increased from 5% to 70%. It may be assumed that by allowing the milk to stagnate in the breasts a chemical change takes place in the secretion which renders it carcinogenic or that excessive ovarian secretion may cause hormonic stimulation of the breasts.

In Adair's[25] study of 200 women with cancer of the breast who had borne children, only 8.5% gave a normal nursing history.

Actinic Agents. The x-ray is used so extensively for diagnostic and therapeutic purposes that one can consider it from the standpoint of an experimental agent.

Repeated slight exposures to x-rays may cause a peculiar dermatitis which may be followed by carcinoma of the skin 3 to 30 years later. Technicians and patients who have been treated over long periods for hypertrichosis, psoriasis or other skin disorders are the principal sufferers.

A single severe exposure to x-rays may be followed in a few days by a severe inflammation of the skin with necrotic changes.

Chronic ulceration ensues which may in a few months or years be follwed by carcinomatous changes.

Radium may produce similar effects to the x-ray but these are seen less often due partly to the fact that the use of radium is more restricted.

In animals, epithelioma and sarcoma of the skin have been produced experimentally by x-rays. Epithelioma has also been produced by ultra-violet rays.

Some Characteristics of Malignant Cells. W. C. MacCarty[26] has long contended that carcinoma cells have definite microscopic characteristics such as increased nucleolar substance which distinguish them from normal epithelial cells.

W. H. Lewis[27] states that the malignant cells of mouse sarcoma, experimentally produced by dibenzanthracene, have cultural and cytologic characteristics which distinguish them from normal cells as shown by direct microscopic observation and by motion pictures of living cells.

Lewis says: "The production of experimental tumors which can be transplanted indefinitely from animal to animal long after all traces of the carcinogenic agents have disappeared can be explained only on the assumption that the malignant cells of such tumors are permanently altered cells which retain indefinitely the power of uncontrolled multiplication in the animal body."

As the general character of the cell is not altered, Lewis believes "malignancy is attributable to some chemical alteration of the protoplasm rather than to some chromosomal or gene alteration."

CONCLUSIONS

We believe it may be concluded that the cancerous process is practically always the same and consists essentially of an "uncontrolled multiplication" of epithelial cells.

Once started cancer continues indefinitely even after the exciting agent is removed.

The nature of the exciting agent may be different in different cancers—a biologic agent (nematode worm), a chemical agent (tar), an actinic agent (x-rays), possibly biologic substances existing normally in the body, which

undergo degeneration. The cause of the "uncontrolled multiplication" of epithelial cells characteristic of cancer lies in the occurrence of some subtle, permanent change in the cell itself.

The exact nature of this change still remains a secret which may possibly be discovered in the course of time.

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THE USE OF PITRESSIN IN COMMON DUCT OBSTRUCTION OF THE GALLBLADDER BY BILIARY CALCULI

With a Case Report, Showing Results of X-Ray Studies in Which No Dye Was Used

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SPRINGFIELD, ILL.

This paper, as the title suggests, is presented here to call your attention to the possibility of the use of pitressin in obstructions of the common duct, as produced by calculi.

The case reviewed proves as conclusively as one case could, that pituitary substance does produce a contraction of the muscles of the gallbladder and biliary ducts strong enough to force a small stone through the ampulla. At the same time it relieves the existing obstruction to the flow of bile, thus making it possible to better prepare such a patient for later surgical removal of the diseased gallbladder.

To better understand the mechanism of the reaction, a brief outline of the anatomy and physiology of the gallbladder and its ducts will be given. A short discussion will follow to review the causes of common duct obstruction, keeping in mind, of course, that the mechanical obstruction, as caused by stones, is the only type commendable to treatment with pitressin.

In presenting a subject of this type it is well to review briefly the anatomy of the gallbladder and biliary ducts. The intrahepatic biliary ducts unite within the substance of the liver to form two major hepatic ducts, the right and the left. These two ducts are in a variable location; at times the junction being not over 1 cm. from the exit of the liver. This duct extends downward from the liver to give off the cystic duct to the gallbladder. From this junction onward it is called the common duct. The common duct is from 7 to 8 cm. in length, and 4 to 6 mm. in diameter. It lies in the freeborder of the duodenohepatic ligament. Passing behind the descending portion of the duodenum, it continues obliquely through the wall of the duodenum, to empty into the bowel at the ampulla. This terminal end of the common duct is in close anatomic and physiologic relation to the major pancreatic duct. These ducts may join to form a common ampulla and empty into the bowel through a common orifice; less frequently, they open separately. Terminal ends of both ducts frequently have a well developed muscular arrangement, the sphincter of Oddi.

The gallbladder is a pear shaped sac, having a thin, flaccid wall and a capacity of from 30 to 50 cc. It is attached to the surface of the right lobe of the liver by a loose connective tissue network rich in lymphatics and small blood vessels. A peritoneal coat incompletely surrounds the gallbladder and is reflected over the surface of the liver, thus leaving an extraperitoneal surface which is in direct relation to the liver.

The gallbladder can be divided roughly into

Fig. 1. Flat plate of the gall bladder region showing gall blader and common duct filled with opaque material ("Milk of Calcium" bile) and with the calculus in the common duct near the ampulla.

Fig. 2. Flat plate of the gall bladder region showing gall bladder partially empty with opaque material in the common duct. This observation was made following the first administration of pitressin.

two parts, the fundus and the neck. The fundus is a saclike portion which extends downward and forward from the neck and may extend beyond the border of the liver. The tip may be completely surrounded by a peritoneal coat. The neck of the gallbladder makes an acute angle with the fundus and points upwards, thus forming the pouch which is known as Hartmann's pouch. The cystic duct is a direct continuation of the neck and extends downward, backward, and to the left to form a z-shaped contour. Its length is approximately 4 cm. It may join the common duct at practically a right angle. Again, it may follow along the common duct for some distance and finally communicate with the latter at a very acute angle. The diameter of the cystic duct is, as a rule, the narrowest of any of the extrahepatic ducts, varying from two to four mm. Its mucosa is thrown into five to 12 folds of crescentic arrangement, the valves of Heister, which project into the lumen of the duct. They are arranged in a spiral manner; because of this arrangement of the folds, it is believed that these special valves prevent the contents from leaving the gallbladder, or at least check a rapid passage.

The wall of the gallbladder consists of three definite layers: the serosal, the fibromuscular and the mucosal. The serosa is similar to the peritoneum. The fibromuscular consists of dense, fibrous tissue with interlacing muscle fibers which, according to Gray, are chiefly in longitudinal direction, only a few running transversely. The mucosal is covered with a layer of columnar epithelium which secretes a mucin-like substance. In the neck of the gallbladder the mucosa tends to arrange itself in folds similar to the Heisterian valves in the cystic duct.

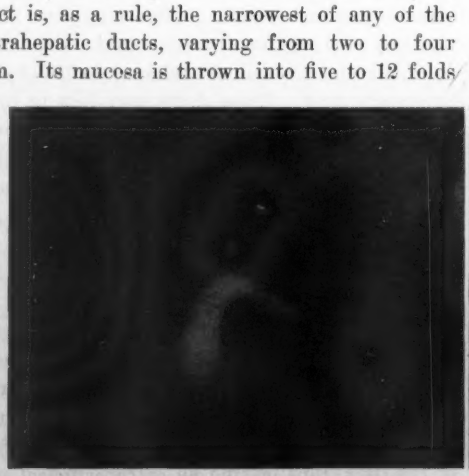

Fig. 3. Flat plate of the gall blader region showing almost total emptying of the gall bladder following further pitressin administration.

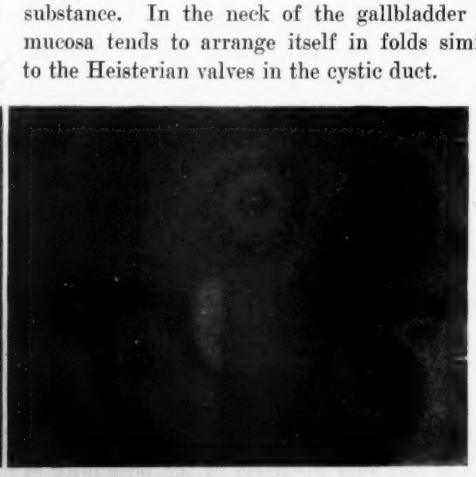

Fig. 4. Flat plate of the gall bladder region just previous to operation showing some opaque material still in the gall bladder.

The duct walls have a structure very similar to that of the gallbladder, the muscle fibers being arranged mostly in a circular manner. The gallbladder receives its blood supply from the cystic artery. The nerve supply is that in intimate relation to the liver, pylorus and pancreas.

Physiology. The physiologic mechanism of the gallbladder and the biliary ducts plays a role of paramount importance in the thorough understanding of the diagnosis and treatment of these organs. It is an accepted fact that bile is secreted continuously by the liver, and that during active digestion the amount secreted is far in excess of that during fasting or gastrointestinal rest. Under normal conditions, the bile passes from the bile radicles into larger ducts and finally empties into the hepatic ducts. Under varying conditions, the bile then flows through the common duct, either to be discharged into the duodenum, or to be checked by a barrier, the sphincter mechanism, to enter the gallbladder.

Physiologic considerations concern several definite functions. Ivy states that the gallbladder manifests the same reaction as the intestines. These he classified and discussed under the headings of absorption, secretions and motor activity. Others have included with these reservoir function and biliary duct pressure regulation.

According to Ivy, the human gallbladder secretes a clear, viscid, mucoid material which if drained continuously, amounts to slightly more than 20 cc. a day.

The evidence at hand proves that the gallbladder does concentrate and has the power of absorbing a relatively large amount of water. Studies of bile concentrate indicate that gallbladder bile is six to ten times more concentrated than hepatic bile, and it seems to be able to concentrate bile pigments more than it can plain bile.

Cholesterin, under normal conditions, is not absorbed from the gallbladder. In disease, however, cholesterol may be deposited in the gallbladder contents; it comes from mucosal desquamation that attends gallbladder inflammation. However, concentration seems to be the result of absorption of normal salt solution from the gallbladder at the rate of three to seven cc. per hour. Stimulation of the vagus nerve increased the rate of absorption while splanchnic stimulation decreased it.

With increase in gallbladder concentration there is an increase in the acidity of its contents. Studies on bile obtained at the operating table show that in an acute inflammation, empyema, hydrops and chronic gallbladder disease the gallbladder does not concentrate normally. Similar results attend experiments after damaging the gallbladder. In the papillomatous gallbladder, however, and those with hypertrophied rugae, the concentrating ability is increased. Evidence favors the fact that the gallbladder functions both in health and in disease. In disease, however, rather than having fluid poured out of the lumen, the fluid is excreted into the gallbladder. This explains the failure of gallbladder visualization in disease.

From this we conclude that the normal gallbladder has the function of secretion and also that of absorption of the fluid content of the bile, thus concentrating it very much more than hepatic bile. Under abnormal circumstances, this condition is very much changed so that various abnormal substances are present in the gallbladder.

That the gallbladder has the power of contraction has been seen both on the operating table and by means of x-ray. There are two types of motor activity of the gallbladder: (1.) tonic contractions, and (2.) tonus rrythm. Tonic contractions produce a sustained rise in the gallbladder pressure lasting from five to 30 minutes. Tonus rhythm is manifested by rhythmical contractions and relaxation occurring at the rate of two to six times a minute. Pressure exerted in the tonic contractions have been as high as 21 to 31 cm. of Ringer's solution. The gallbladder is innervated by many nerve fibrils coming from the ganglion cells which are situated in the gallbladder. Motor activity is apparently under the influence of the vagus and splanchnic nerves, contractions being enhanced by weak vagus stimulation. Reflex stimulation of the central end of the vagus produces a contraction of the gallbladder, relaxation of the sphincter, contraction of the ampulla and evacuation. This is what has been termed the reciprocal innervation of the gallbladder and sphincter of Oddi. During storage of bile the sphincter contracts and the gallbladder relaxes, and during evacuation the gallbladder contracts and the sphincter relaxes. This is not adhered to in disease. Experimental evidence that this motor activity of the gall-

bladder as applied to man has produced the same conclusions.

Fear, anxiety, and pain cause some evacuation of the gallbladder which may in part be due to the action of the adrenals. Sometimes water may produce a slight reaction, too. The most complete evacuation was obtained after a meal of five egg yolks and a glass of cream. Injection of this mixture into the ileum, colon, and rectum produced no effect. There is still a great deal of uncertainty concerning the action of drugs on the gallbladder. Ivy states that pituitrin causes definite contraction while pilocarpine and physostign have little or no effect. Choline probably causes slight emptying, while epinephrine may possibly produce some delay in evacuation. Alcohol and atropine are also indefinite in their reaction.

There are many circumstances pointing toward the hormonal gallbladder stimulation idea. The indications are that secretin is a cholecystokenetic hormone and as such has a direct influence on gallbladder contractions. Unless this is accepted, it is most difficult to explain the gallbladder evacuation that occurs after blood transfusion in which the donor has previously partaken of a fatty meal.

From this we see that the gallbladder very definitely contracts and expels concentrated bile into the duodenum. It has been explained how these contractions may be produced experimentally by giving certain fatty foods by mouth and by the use of certain drugs. The most effective drug which produces contractions is pituitrin.

In general, the extrahepatic biliary ducts are passageways which convey bile and gallbladder contents into the duodenum. They are elastic tubes, susceptible to dilatation, and apparently possess some power of contractility. They differ from the gallbladder in that they have no power of absorption of concentration. However, in the presence of an obstruction, they secrete a mucinous fluid which is alkaline and devoid of cholesterin, bile salts and pigments. When the gallbladder function is absent, due to either surgical removal of the gallbladder or disease which closes off the cystic duct, the ducts dilate. After cholecystectomy there is a continuous flow of bile into the duodenum, even during fasting. It appears that the removal of the gallbladder brings about a marked alteration in the bile discharge mechanism. The anatomic arrangement of the duodenal end of the common duct is such as to afford an excellent mechanism for the prevention of ascending infections from the bowel.

It may be stated then that while the biliary ducts are more or less similar in anatomical structure to the gallbladder, they possess no power of absorption or concentration. They are able to secrete a fluid in the presence of an obstruction, and some authors believe that the ducts have the power of contracting much the same as the gallbladder.

With this brief review of the anatomy and physiology of the gallbladder and its ducts in mind, the cause of obstruction of the common duct will be considered next. Extrinsic lesions may cause compression and obstruction of the biliary passage. Judd has mentioned that a stone, embedded in the neck of the gallbladder, may compress the common duct and lead to symptoms of obstruction. Tuberculosis in other organs, and presence of a mass of calcified glands at the root of the mesentery, led to the diagnosis of obstruction of the common duct. Enlarged glands, due to Hodgkin's disease, have been known to obstruct the common duct. Secondary carcinomatous nodules may compress the common duct. Carcinoma of the head of the pancreas is by far the most frequent of extrinsic causes of biliary duct obstruction. Aneurysms of the cystic or hepatic arteries causing duct obstruction have been reported.

Of the intrinsic conditions that cause an obliteration of the bile duct, it might be well to mention congenital obliteration which is comparatively rare. Congenital cysts occasionally cause obliteration. Acute catarrhal cholangeitis may cause an obstruction by the inflammation that is present. Suppurative cholangeitis is also a cause of duct obstruction. Parasitic effect on the biliary duct, such as roundworm, may be an extremely uncommon cause of obstruction. Stricture of the duct may produce a narrowing of the lumen enough to cause obstruction. These may follow inflammatory processes with ulceration, or they may follow operative procedure. Benign tumors of ducts are rare, but, occasionally, a papilloma has been reported in the literature as being the cause of obstruction. Malignant tumors are uncommon. Shapiro and Lifvendahl report that in 2500 autopsies at the Cook County

Hospital in two and one-half years 12 cases of carcinoma of the extrahepatic ducts were encountered. Finally, the presence of gallstones in the gallbladder or biliary passage give us by far the greatest cause for biliary duct obstruction.

There are several varieties of gallstones and pathological processes involved in their formation that are not the same for all types. Of the many varieties, the pure cholesterin stone is the one over which there has been most controversy. Stones are usually single, not more than three-fourths of an inch in diameter, oval in shape, nodular on the surface, semi-transparent, and of a waxy consistency. At times they may be mixed with a certain amount of bile pigment and with calcium carbonate. They are definitely seen in stout, middle-aged women who are usually married and have had children. When we remember that the main function of the gallbladder is to concentrate the bile, that during pregnancy the blood cholesterin is said to be raised, that stout women who eat largely of rich foods are likely to have increased cholesterin intake, and that with advanced age such patients become more lethargic, it would seem natural to believe that the formation of these stones is metabolic in nature.

The pure pigment calcium calculi are entirely different in character and formation. The pigment may be either biliverdin or bilirubin. The biliverdin calculi are found most commonly in the gallbladder, where they appear as small, irregular, dark green or almost black, friable masses resembling small cinders, whereas the bilirubin stones are most commonly seen in the obstructed common bile duct where they form putty-like masses filling the lumen of the duct. If present in the gallbladder, they soon set up a cholecystitis and then become coated wholly or in part by a layer of cholesterin, thus supporting the fact that cholesterin is formed by the inflamed gallbladder wall. It is with the bilirubin stones that we are the most interested in connection with this discussion. When there is a long continued obstruction of the common bile duct, it is well known that the bile is greatly concentrated and forms a thick, tenacious, tar-like material, and, if any stones are present, they are always of the pure pigment variety. This concentrated bile may be opaque to x-ray. Stones of this type are not only friable but easily soluble, and are therefore difficult to mount as permanent specimens in a liquid medium.

The third type of stones is the mixed or common, which are variable in size and shape, but on section are nearly always laminated, the layers being alternately formed of cholesterin and pigment calcium.

Case history to be considered is as follows: White male, age 52, married, American, a cement worker in the summertime and a coal dealer in the winter. Ht. five feet six inches; wt. 131 pounds. On admission to the hospital he complained of nausea and vomiting, severe epigastric pain, headache, constipation, general weakness, loss of weight, and scant highly colored urine. On October 15, 1935 the patient presented himself to determine the cause of his debility and loss of weight. General examination at that time was negative, except for several apparently infected teeth. He was advised to have x-rays taken of his teeth. On Dec. 21 he returned after having had four teeth extracted. He was much improved and had gained nine pounds in weight, but in the past three days he had had severe pain along the costal regions on both sides of the chest. He stated that he felt that the pain was caused by gas in the abdomen, because it was relieved when there was a movement of gas. He stated that these areas were so sensitive and tender that even the weight of bedclothes increased the pain. Examination at this time showed the abdomen slightly distended with gas but no abdominal tenderness, no elevation of temperature, and with tender areas along the costal margin of both sides of the chest. On Dec. 30 he was seen at home having very severe pain in the upper right quadrant. The pain was of a boring character, and the patient stated that it apparently went through to the back. It was so severe that it was not relieved until the patient was given half a grain of morphine hypodermically. At this time he was slightly nauseated but did not vomit. The skin was slightly yellow, and the cornea of the eyes showed considerable yellow discoloration. He was relieved of pain until the next afternoon, when it was necessary to repeat the morphine. After this he was free from pain until January 2 when he was seen at home complaining of very severe pain, nausea, and vomiting, and moderate abdominal tenderness in the right upper quadrant. At this time the skin was very yellow. He stated that the stools were clay-colored. On January 2 he was sent to the hospital for further study.

The family history was essentially negative. His father died at the age of 91, and mother at the age of 86. Two sisters and one brother were living and well. His wife and four children were living and well.

Except for childhood diseases he had had no severe illnesses. During the past three years he had an occasional stomach upset which he ascribed to food that did not agree with him. During these attacks he experienced slight nausea but no pain; after a few days on a light diet he was normal again. These attacks have been more frequent in the past two years, and he has had three during the last year.

Personal history was negative. He has always worked hard; he had had a very good appetite. Bowels have been normal, and urine has been normal. He always slept well. Smokes moderately, drinks coffee moderately and uses no alcohol.

Examination at the time of admission to the hosuital revealed a fairly well nourished white male about 52 years of age, very jaundiced and apparently suffering from acute pain. The cornea of both eyes was quite yellow. His mouth showed several dead teeth and very definite pyorrhea pockets. His chest, heart and lungs were normal.

His abdomen was slightly distended. There was no rigidity and only slight tenderness on deep pressure over the gallbladder region. Liver was normal in size. Spleen and kidneys were not palpable. There was no tenderness in the lower part of the abdomen. On percussion, the abdomen was tympanitic throughout and the liver dullness was within the limits of normal. His extremities were negative.

Laboratory findings: On admission the urine had large quantities of bile. Blood examination showed hb. 80%; rbc—4,010,000; wc—7000, with polymorphonuclear leucocytes 64, lymphocytes, 35, monocytes 1. A second blood count was made two days after admission and found to be the same except that wc were 1000 lower. The icteric index was reported as 75 on Jan. 4, and as 100 on Jan. 5. There was some question as to the accuracy of these tests because the blood hemolized so rapidly. X-ray examination, made on the day of admission, showed an area of increased density in the region of the gallbladder, which had the appearance of one large stone within it. There was some increase in density of the shadow, apparently in the distal end, which had the appearance of a small stone in the ampulla. In the opinion of the roentgenologist this small density appeared to be thickened bile with considerable bile pigment and calculus deposit. (Fig. 1.)

Progress notes. On admission, the patient was fairly comfortable because he had received one-half grain of morphine just before leaving for the hospital. He was quite comfortable until the following afternoon, when he became extremely nauseated and vomited large quantities of yellow fluid. At 12:15 P. M., he received a second hypodermic of morphine. His general condition was gradually becoming worse. The urine became more scanty and the bowel movements, even by enema, were very poor.

On Jan. 5, his 3rd day in the hospital, it was decided that surgery would have to be resorted to if there was no improvement in the next 12 hours. At 12 o'clock on that day he received one ampule of pitressin. At four he received another, after which he was nauseated and complained of very severe pain in the epigastrium. He stated that it was of a very different character than he had had, and he felt as though his abdomen tightened up in the region of the gallbladder. At six P. M., he received morphine and atropine after which he was much more comfortable. At eight o'clock he refused the ampule of pitressin because of pain which it produced previously. He slept fairly well and on the morning of the fourth day he felt considerably better. At this time, a second x-ray of the gallbladder was made, and it was found that the shadow previously reported as a small stone in the ampulla was completely absent, and the shadow of the cystic duct and the common duct could be definitely outlined. (Fig. 2.) On the fourth day, the patient received three ampules of pitressin at four hour intervals without any apparent discomfort. For the first time since admission to the hospital he had a normal bowel movement without the use of an enema. At this time, a third picture was taken, and it was found the gallbladder had almost emptied itself. (Fig. 3.) On the sixth day he was discharged from the hospital.

He was observed at weekly intervals and he continued to improve. The jaundice gradually faded, and on Feb. 1 he was up and about most of the time. On Feb. 14 the patient was readmited to the hospital for surgical treatment. A right rectus incision was made and the gallbladder was found to be small with a thick wall, surrounded by adhesions. No stones could be palpated, and it was noted that the gallbladder was twisted because of adhesions attached to the upper surface. It was dissected free from its bed and removed. The cystic and common ducts were explored and no obstruction was noted. The gallbladder was filled with a thick black bile. The serosa was grayish red. The wall was thickened to five mm. and the mucosa had a granular appearance. Microscopic examination showed chronic suppurative cholecystitis. It is interesting to note that at the time of operation, while the skin, eyes and urine presented no bile, the tissues in general were quite yellow in color. The abdominal cavity was drained, and following the operation there was slightly more hemorrhage than usual but the patient made an uneventful recovery.

In conclusion: The biliary system consists anatomically of intrahepatic ducts which join to form the two major hepatic ducts, and these in turn unite to form the common duct which is joined by the cystic duct, to which the gallbladder is joined. The gallbladder and ducts all have three layers: serosa, muscular and mucous. A gallbladder has the function of secretion, absorption, motor activity, and serves as a reservoir for bile. That the gallbladder has the power of concentration is very well established. There is considerable doubt as to the contractility of the gallbladder but some men feel that it does have this function. The case presented illustrates the presence of a biliverdin stone obstructing the common duct, causing concentration of bile and bile pigments with calcium deposit to make it opaque to x-rays. The success of the preoperative treatment would seem to substantiate the fact that the gallbladder and the biliary ducts have the power of contractility.

Following the injection of pitressin we have presented definite evidence to show that the small

stone in the ampulla was dislodged and forced into the intestinal tract. Further injections of pitressin apparently caused more complete evacuation of the gallbladder by stimulating its contractions. The findings at operation would tend to substantiate the condition as found preoperatively.

While it is quite obvious that no conclusions should be drawn from the observation of one case it would appear that the use of pitressin might well be considered in the treatment of common duct obstruction by small biliary calculi.

TUBERCULOSIS SURVEY OF THE PEORIA STATE HOSPITAL

Preliminary Report

M. POLLAK,* M. D., I. TUROW, M. D., AND M. KURTH, M. D.

PEORIA, ILL.

It has been quite a while since we talked to you for the first time about this Survey. It is not our own fault that we are proceeding with it in a rather slow manner, and have done only one-fourth of the work. The first tuberculin tests were made about four months ago. With the little time that we have at our disposal it is rather hard to proceed speedily.

Thus far we have tuberculin tested all the employees, x-rayed the positive reactors, tested 535 patients, and also x-rayed the positive reactors among them. For the tuberculin test we use the P. P. D. tuberculin which, as you know, was developed by the Research Committee of the National Tuberculosis Association. This tuberculin is produced in two strengths. The second strength being used after the test was negative with the first dilution. Because we wish to finish the tuberculin testing of the whole hospital population at first with the weaker dilution, as yet we have made no rechecks with the stronger tuberculin. The nurses being the most exposed to a tuberculosis infection, however, were all x-rayed irrespective of the results of their tuberculin test.

As you know, it has been our practice in this hospital to x-ray the chests of all the nurses at least every six months in order that tuberculous lesions may be detected among them should such occur. You may remember that a few months ago we had a nurse here in whom far advanced tuberculosis had to be diagnosed, when five months previously she had a negative radiogram. In this particular case the sputum was positive for the tubercle bacilli. Therefore, the diagnosis could not even be questioned. Following this experience we had to recommend that the condition of the nurses be checked by x-ray at least every three months instead of six as previously. Due to the shortage of personnel, however, this recommendation is not being carried out. Now that we have the young student nurses with us, it would be of paramount importance in safeguarding their health if they would be x-rayed before they are assigned to their training and then two months later, before they leave here.

It is of interest to know that among the 307 employees tuberculin tested, 161 or 52.44% have shown a positive reaction. If we break this group down, we find that among the 32 nurses tested 27 or 84.37% gave a positive test. This is an exceedingly high percentage. Among the 223 attendants tested, 112 or 50.20% have given a positive reaction. This percentage would correspond with that of the population in general, we believe. We haven't grouped the doctors separately because they would represent a very small group. We have tested 39 employees not in active contact with patients and among these 23, or close to 59% showed a positive reaction. None in the group of employees, however, showed signs of active tuberculosis on the radiogram.

We have tuberculin tested 535 patients; of these 389 or 72.71% had a positive reaction. That is a rather high percentage, particularly considering the fact that we have tested thus far only with first strength tuberculin. When we will test the remainder with the second strength of tuberculin we are afraid we will get a few more positive reactors among them. Of the 256 males tested, 179 or close to 70%, and among the 279 females, 210 or slightly over 75% were positive.

We have x-rayed all the positive reactors, all the nurses and doctors irrespective of the result of their tuberculin test, and all the patients on both tuberculosis wards on whom we did not perform the tuberculin test, because it was expected that they have tuberculosis. On routine examinations flat celluloid films were taken. At the time of the reading of the films a few of

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them were found to be poor from a technical point of view. These had to be retaken. Some of the films showed questionable signs of tuberculosis. These patients were rechecked by stereoscopic films. Due to the interest aroused by this survey, a number of chest films were ordered from the various wards and these films were also included in our study. All told thus far, 521 x-ray examinations were made.

As stated before, no tuberculosis was diagnosed either among the nurses or the employees. One case of minimal tuberculosis with positive sputum, however, was found among the medical staff.

Of the 32 patients on the *female tuberculosis ward,* five or 15.62%, and of the 24 patients on the *male tuberculosis ward,* four or 16.66% had a *normal chest x-ray.* One of the latter died on the ward of a terminal hemoptysis and was buried before his x-ray was studied. Permission for post-mortem examination could not be obtained and the diagnosis on his death certificate was given as pulmonary tuberculosis.

For practical purposes we thought it advisable to proceed with our study from ward to ward, starting with the wards where the sickest patients are, because we expected to find the relatively largest number of tuberculous patients on these wards. Thus far we have finished our study in Cottage 2-C (male) and Cottage 7-C (female). Our findings were as follows.

Of the 153 male patients all were tuberculin tested and 119 or 77.77% gave a positive reaction. Of the 82 female patients 81 were tested and of these 62, or 76.54% gave a positive test.

Of the 119 male positive reactors 23, or 19.33% were found to have tuberculosis on x-ray examination and in six or 5.04% the reading of the films warranted further observation before they could be declared free from active tuberculosis. In other words 15.03% of the sickest patients have active tuberculosis and an additional 3.90% show signs pointing towards the disease.

Of the 62 female positive reactors nine, or 14.51% were found to have tuberculosis by the radiograms, and an additional three, or close to 5% were found to be suspects.

Of the 23 tuberculous among the males three, or slightly over 13%, and of the nine females two, or 22.22% had the disease in the far advanced stage; and one had a healed hemotogenous spread. The others were in the minimal stage.

We were naturally interested to learn where these patients who have been discovered in the course of the survey have acquired their disease. Accordingly we studied the length of their stay in the institution and on the wards.

Of the three far advanced male patients one was an inmate for over 12, one for over 4½ and one for 1½ years. Of the 20 minimal cases two were inmates of the institution for one to two years, five for two to five years, eight for five to ten years, four for 10 to 20 years, and one for over 29 years. Of the three far advanced cases one was on this ward for 1½ months and the other two for over one year and four months. Of the 20 minimal cases one was on the ward close to five months, five from seven months to one year, seven for one to two years, seven for two to five years, and of the two far advanced female patients one was an inmate for over 15 years and one for over eight months. The case of hematogenous tuberculosis was at the institution for close to four years. Of the six female minimal cases one was an inmate for close to three months, one for 10½ months, one for slightly over one year, one for over two years, one over 10 years, and one for over 14 years. The two far advanced cases spent on the ward six and 10 months respectively. Of the six minimal cases two were on the ward for slightly over one year, two for six to seven months, and two for 3½ to 4½ months.

Since the Survey started three male and seven female patients were found to have tuberculosis after they were transferred to the hospital division. Of these the condition of one was so far advanced (a case of bilateral extensive tuberculosis with partial spontaneous pneumothorax) that the patient died a few days after admission. Another case was transferred to the hospital because he presented a difficult feeding problem. When a radiogram was taken it revealed far advanced extensive bilateral tuberculosis with spontaneous hydropneumothorax on the right.

Thus far we have found 89 cases of tuberculosis. Of these, we think, in 15 or close to 17%, artificial pneumothorax; in four, or close to 4.5% phrenicectomy (patients over 40 years old); and in one a thorcoplasty (a patient in whom in a tuberculosis sanatorium a phrenicectomy was performed after unsuccessful attempts for arti-

ficial pneumothorax) are indicated. In addition we have found six cases in whom a bronchoscopy is indicated to clear up the diagnosis on definite pathological changes which did not seem to be to us of tuberculous nature.

Sputum examinations were made on the specimens of 46 patients and of these tubercle bacilli were found in 12 cases. The sputum specimen of the one physician with minimal tuberculosis was also positive.

Discussion. Tuberculosis prevention in a medical institution starts with the protection of the institutional personnel. Such a protection has a twofold purpose; it prevents the spread of the disease from the tuberculous patients to the healthy personnel and in turn it protects the patients from an infection on the part of tuberculous attendants. Experience of others as well as our own has proved that, due to their intimate contact with tuberculous patients, nurses are only too prone to develop tuberculosis. It was also shown by others as well as by this survey that a checkup by a radiogram in six month intervals is not satisfactory for such protection, and that such a checkup at intervals of three months will be more adequate. Personnel in less close contact with the patients can be adequately protected by a radiographic checkup every six months and the others by a checkup once a year.

It is generally known that tuberculosis is an exceedingly common disease among mental patients and that the latter frequently die of tuberculosis. According to the statistics of our own institution since 1920, annually, about 10% of the deaths occurring here is due to tuberculosis. Our experience in this survey thus far, however, would prove that the diagnosis of tuberculosis was not arrived at in a careful and adequate manner and we are inclined to believe that this percentage of deaths is much lower than it is in actuality.

Not having finished our study as yet we are in no position to state the percentage of tuberculosis infection in our patient population as determined by the tuberculin test, or the actual number and percentage of patients suffering from active pulmonary tuberculosis. We are safe in stating, however, on the basis of the facts brought out in this study that around 15 per cent of the patients in need of "hospital" care are suffering from active pulmonary tuberculosis. This fact coupled with the other that at the time of this writing we had already found 89 cases of active tuberculosis and that we may safely expect that by the time this survey will be concluded this number will be considerably increased, emphasizes the magnitude and severity of the problem we have to face in dealing with tuberculosis in our institution.

It should also be emphasized here that it is over 56 years since the fact has been established beyond the shadow of doubt, that tuberculosis is an infectious disease. Yet in our practice we do not seem to take cognizance of this fact. How differently we act when a case of typhoid, diphtheria or any of the other acute infectious diseases is discovered among our patients. Don't we extend every effort to prevent the disease from spreading to other patients? Why do we take a different attitude in regard to tuberculosis? The fact that the incubation period in tuberculosis, as a rule, is longer than that of all the other contagious diseases, cannot be held as valid justification of our present indifference. Not until a medical institution has taken the same stand in reference to tuberculosis as it takes in regard to other infectious diseases, has it fulfilled its duty towards its patients in protecting them from becoming infected with tuberculosis within its own walls.

From the length of stay in the institution of the five far advanced cases found on the two hospital wards surveyed, it is safe to conclude that at least three have developed the disease while they were patients here. There is also a strong possibility that the remaining two (one staying in the institution for one and a half years, and the other for over eight months) have also developed their disease in our hospital. Should this, however, not have been the case, we may be certain in assuming that their disease reached the far advanced stage here. The length of stay of the minimal cases on the two wards together with that of the far advanced cases would tend to prove that at least the majority of the minimal cases have acquired the disease from their fellow patients with the advanced stage of the disease.

Once again it has been proved by this survey what we know only too well from other similar studies that in the diagnosis of tuberculosis we cannot rely on physical examinations, but that we have to resort to the chest radiogram. Only on the basis of the radiogram are we in a posi-

tion to state that an individual has or does not have tuberculosis.

A number of important questions have been raised by this survey:

1. What should be done with the tuberculous patients after they have been diagnosed? It is obvious that they will have to be segregated from the non-tuberculous patients. By detecting tuberculous patients we do not add new patients to the patient population, and with little thought and effort it should be a relatively easy problem to find a large enough building on the grounds where these patients could be adequately housed. With this arrangement care will have to be taken that the positive sputum cases be segregated from the negative ones.

The practice in tuberculosis wards which have their own dishes kept on the wards and washed there, and where the nurses and attendants use contagion technique, as is already done on the present small wards, shall obviously be continued in the newly assigned building.

2. How can the spread of the disease be prevented? a. It can readily be expected that some of the patients have tuberculosis at the time they are admitted to the institution. These, however, can be detected only if tuberculin testing and chest x-raying the positive reactors is made a routine procedure on admission; b. The same procedure of retesting the positive reactors should be repeated in six month intervals on all the "hospital" patients and once a year on all the ambulant patients. The negative reactors shall be tuberculin tested annually and x-rayed at the time they are found positive.

Eternal vigilance is the price we have to pay if we want to remain free of infectious diseases. We cannot shirk our duty to pay this price when tuberculosis is concerned.

3. What should be done with the tuberculous patients after they are discovered and segregated?

It is our opinion that they be subjected to the same type of treatment as the non-psychiatric tuberculous patients are in our well conducted sanatoria. Collapse therapy should be instituted whenever indicated irrespective of the patient's psychiatric status, because by collapse measures the sputum positive, and therefore infectious patients, can be converted in the shortest possible time into sputum negative and therefore non-infectious status. In this way these patients will become harmless as far as the spread of tuberculosis is concerned and will cease to constitute a menace to their fellow patients or home environment should they be paroled and return home.

We may expect that some of these patients will present a difficult problem when proper treatment, particularly collapse therapy, will be instituted. But no doubt by proper attention and care it will be possible to overcome the difficulties presented by individual cases.

4. Is the hospital provided for the proper care of its tuberculous patients?

As stated before, the facilities for the housing and segregation of these patients can be readily made available because the size of the hospital population will not be increased. There is, however, urgent need for the improvement in their medical, laboratory and nursing care. It can be hardly expected that with the present small staffs justice be done to the responsibilities facing us. Although every effort was made on the part of the managing officer and the two physicians who were assigned to this survey (in addition to their other duties) together with the laboratory and x-ray technician to speed along the work, yet after four months' effort not even the tuberculin testing could be finished. Such a result speaks eloquently in itself of the lack of personnel for this work. It is urgently needed that at least one of the physicians be immediately relieved from his other duties, so that he can devote all of his time to tuberculin testing. One physician could complete this work with the assistance of one to two nurses readily within one to two weeks.

It is also of prime importance that all the tuberculous patients be placed under the charge of a physician versed in the diagnosis and treatment of tuberculosis, who could devote his full time to this problem.

Our experience has also proved that one x-ray technician cannot carry the burden of the work to take the many radiograms necessary for such a study and later for the diagnosis of new cases. It is to the greatest credit of Miss Peterson, our x-ray technician, that in her enthusiasm for our study she has taken care of the radiographic work to a much greater extent than one could have expected. But even so it would take at least about one more year to complete this study, should she not receive any additional help. It is therefore imperative that a second x-ray technician be employed by the hospital.

Sputum examinations were hardly made in the course of this study, simply because one technician has to perform the work both in the clinical and x-ray laboratories. Yet sputum examinations are essential in the segregation of infectious cases.

The reading of the radiograms is done at present by the senior author of this report, who is not a member of the hospital staff. It cannot be expected, however, that he will be able to devote his time indefinitely to this problem. It will become necessary, therefore, that a radiologist, well versed in chest work, be added to the medical staff.

The care of the tuberculous, no doubt, will require additional nursing service, and, therefore, nurses will have to be added to our staff. Their number, however, will have to be increased gradually as experience will show the needs.

We are only too keenly aware of the fact that the improvements here suggested represent considerable financial expense. But we are also convinced that buildings, no matter how well planned and constructed, and domiciliary care of patients do not constitute a hospital. Properly qualified and adequately manned professional staffs are essential in building up a medical institution for the proper care of patients.

For years great concern has been expressed throughout the country at the ever increasing number of mentally ill patients and the ever increasing financial burden they represent to our communities and tax payers. We are firmly convinced that by increased professional attendance many of the patients receiving at present only domiciliary care, could have their condition so improved that they may be safely returned to their homes to the care of their own families and thereby lessen the burden on the tax paying public. By improving the professional care in our institution the turnover of the patient population could be readily increased so that the present hospital facilities could take care of a larger number of patients in a given length of time. We feel, therefore, that while our recommendations entail some financial expense, this expense would be more than repaid by the earlier and better rehabilitation of the patients, and thereby by the better utilization of the present hospital facilities.

CONCLUSIONS

1. Tuberculosis is the cause of death of a considerably large number of mentally ill patients.

2. Many of these patients acquire the disease while they are inmates of our State Hospitals.

3. Tuberculosis, therefore, constitutes a major problem with which our mental institutions have to cope.

4. Tuberculin testing and radiograms are essential in the diagnosis of tuberculosis.

5. Patients admitted to mental institutions should be subjected routinely to a tuberculin test. The positive reactors should be x-rayed.

6. Thereafter negative reacting patients under "hospital" care should be retested every six months and the positive reactors re-x-rayed every six months.

7. The nursing and medical personnel should be x-rayed every three months.

8. Mentally ill tuberculous patients should be subjected to proper and adequate "sanatorium" care including collapse therapy.

RECOMMENDATIONS

To carry out the above program it is recommended that this hospital: 1. Assign one of its physicians and one or two nurses to complete the tuberculin testing commenced with this survey.

2. Segregate immediately all the patients found to be suffering from tuberculosis, and that in this group the positive sputum cases be segregated from the negative cases.

3. Assign one physician for the exclusive care of the tuberculous.

4. Assign an adequate number of nurses for the care of the tuberculous.

5. Institute collapse therapy for these patients whenever such treatment is indicated, irrespective of the patient's psychopathic status.

6. Add one more x-ray and one clinical laboratory technician to its staff.

7. Add a radiologist to the medical staff.

We wish to express our sincere thanks to Dr. Walter Baer, Managing Officer, for his interest and cooperation shown in this survey and to Miss E. Peterson, x-ray technician for the enthusiasm with which she carried her heavy burden in x-raying the patients surveyed.

SYNTHETIC MALE HORMONE IN THE TREATMENT OF PROSTATIC HYPERTROPHY

FRENCH S. CARY, M. D., F. A. C. S.

CHICAGO

Diseases of the prostate have been recognized from time immemorial, if we can believe Sir Everard Home, who surmised that the enlargement of the prostate gland which so frequently occurs in men past fifty years of age is "alluded to in the beautiful description of the natural decay of the body in the Bible, in the book of Ecclesiastes, the 12th chapter, the 6th verse, where it is written, 'or the pitcher be broken at the fountain, or the wheel broken at the cistern,' which expresses the two principal effects of the disease, the involuntary passing of the urine, and the total stoppage."

In the sixteenth century Nicolo Massa, a physician of Venice, who died in 1563, made brief reference to the prostate, and Riolanus, about the middle of the sixteenth century, was the first to suggest obstruction at the neck of the bladder due to swelling of the prostate. Among the first to operate by the perineal route was Sir William Blizzard, who before 1806 performed several perineal prostatotomies for enlargement without any calculous formation. Early in the nineteenth century Sir William Ferguson employed perineal prostatotomy. Guthrie, in 1834, was the first to operate under the name of "division of the bar at the neck of the bladder." He used a catheter carrying a concealed blade. Mercier, who was a well known prostatic surgeon, devised special instruments in 1837 called "prostatotome and prostatectome." H. H. Young's punch instrument developed later was a modern refinement of these earlier instruments, and later his galvanocaustic apparatus introduced at John Hopkins University, the great advantage being that it was nearly impossible for the prostate to slip away from the beak of the instrument, and thus the risk of burning the bladder instead of the hypertrophied gland was minimized.

Belfield in October, 1886, did his first suprapubic operation for removal of the prostate, but priority in bringing this procedure before the profession has been rightly attributed to McGill of Leeds. Freyer makes claim to being the first to totally remove the prostate by the suprapubic route, but Guiteras' claim that Fuller of New York was the first to do a "total" suprapubic prostatectomy is apparently based on the best of grounds.

Prostatectomy by the perineal route followed closely on the operation for prostatotomy, and preceded by a number of years McGill's suprapubic method; Ferguson (1901), Zuckerkandl (1889), Albarran (1901), Murphy (1902), Young (1903), Senn (1903) and many other prominent surgeons. Space does not permit me to describe these operations with which you are all so familiar. This brings us up to the resection by the transuretheral method, which, during the past few years, has been practised by many surgeons, some with good and some with poor results. During the last few years the possibilities of clinical application of glandular therapy in prostatic hypertrophy has been brought to our attention by the results of animal experimentation along these lines, which has been carried on in Europe and in this country.

The stimulus for this clinical investigation was the recent availability of a pure "male hormone," which was obtained synthetically in 1936 and which can be manufactured now in unlimited amounts, independent of animal sources, such as glands or body fluids like urine. This synthesis, naturally, was made possible only after elucidation of the chemical structure of the hormone which, on the other hand, depended on the isolation of a pure crystalline substance with definite hormone-like properties, from the gland or any other part of the body or its excretion fluid, the urine. The pace-maker and guide, without which this evolution would be incomprehensible, was a reliable, quantitative test for determining the effectiveness of the various extracts or fractions, or purified concentrates, which had to be investigated. Such test was not devised before 1929 when Koch and Gallagher[1] presented their method of measuring the effect upon the size of the capon's comb. Thus, not more than eight years were required for all the steps leading to our present chemical knowledge of the male hormone.

The first crystalline product with marked effectiveness upon the capon's comb, as well as on the accessory sex organs of castrated mammals, was isolated by Butenandt[2] in 1931 from human urine. The compound later (1934) was named "androsterone," when further investigation shed some light on its structure and on its

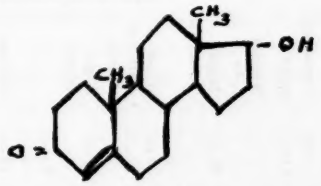
chemical relationship to cholesterol, the formula of which had been established, not long before, by the complementary work of various authors. Very soon after, androsterone was synthetically prepared by degradation of cholesterone by Ruzicka[3] and his co-workers.

However, even before this remarkable scientific progress, represented by the synthesis of a substance producing male characteristics in castrated animals, could receive due appreciation by the contemporaries, new investigations led to the recognition of an additional physiologically active substance which was found in urine, and, finally, to a third which was isolated from testis tissue by David[4] and his associates in 1935. This latter compound, being synthesized from cholesterol shortly after its isolation by Ruzicka and others, and designated "testosterone," differs from androsterone in various aspects, and according to our present knowledge, is the only, or the most important, hormone secreted by the testes. Testosterone, in contrast to androsterone, is more stable in the presence of alkali and oxidizing agents, and this difference, besides a striking deviation in potency observed even before urinary and testicular concentrated extracts were compared on biological objects, led the way to its chemical discovery and the elucidation of its structure.

Testosterone, like androsterone and also dehydroandrosterone, which was the second active substance isolated from urine and other substances, which was synthesized in the meantime and found to possess more or less the characteristic action of male hormones, belongs to the so-called sterols. This means compounds structurally characterized by a ring system consisting of 3 benzol rings, arranged in a manner known from phenanthrene and a ring with only 5 carbon atoms. This chemical skeleton, the biological importance of which has become more and more evident, being not only the basic structure of cholesterol, ergosterol and vitamin D, but also of the bile acids, the digitalis glucosides and the female sex hormones, estrogenic substances as well as progesterone, offers, of course, manifold possibilities of structural differences, of isomers, of hydration, of side chains, etc., so that the multitude of biologically active and widely different substances can be explained.

The formula of all "androgens"—a name accepted to designate substances possessing masculinizing activity[6]—is similar to the formula of testoseterone, which is shown in the following paragraph. The chemical variety of the androgens is due to the interchange of the hydroxyl- and keto-groups, and especially to the presence or absence, respectively, of a double bond between two carbon atoms of the first or, as is the case with special isomers, of the second benzol ring. The position of the double linkage, as well as that of the keto- and hydroxyl-groups, can also be recognized in the formula given for testosterone. For those interested in further details regarding the chemical composition of the sex hormones, and especially the relationship between the female and the male hormones, the recently published work of Kurzrok (Endocrines in Obstetrics and Gynecology) is recommended. In this book a short but comprehensive description is given of each.

The systematic, scientific nomenclature of the androgens is based on the above mentioned double bond. Substances, containing the completely hydrogenated "cyclopentenophenantrene," that is the sterol skeleton without the double bond, are called "androstan" derivatives. Substances, with one double link in this ring system, belong to the "androstene" series. Further suffixes, in the form of the syllables "ol" or "one," respectively, signify, with the aid of numbers given to each carbon atom, the isomeric configuration and the position of the hydroxyl- and the keto-groups. Thus, androsterone, belonging to the androstan series is: 3, 17 androstan-ol-one. Testosterone, belonging to the androstene series is: 17, 3 androstene-ol-one.[7]



Formula 1

As seen from this formula, testosterone has the quality of an alcohol and is, therefore, able to form esters. Such esters have been prepared by Miescher and associates,[8] and their biological examination showed, principally, the same effect. But the effect varied in regard to the intensity and duration of action. Some of the testosterone esters, such as the formate, acetate, propionate, etc., produce in both tests a more prolonged and

REPORT OF CASES TREATED SINCE AUGUST, 1936

Patient	Age	Type	Residual Urine	Cystoscopy	Nocturnal Frequency	Perandren Injections	Results 1 Month	2nd Series Perandren Injections	Residual Urine	Cystoscopy	Nocturnal Frequency	Results 2nd Month	Results 1 Year
C. R. R. 1	67	Prostate Hyp.	50 cc.	Small Medium Lobe	3-4	6	Improved	6	10 cc.	Med. Bar Smaller	2	Good	Excellent
H. S. S. 2	62	Prostate Hyp.	80 cc.	Middle L. Lateral	3-4	6	Improved	6	5 cc.	Both Lobes Smaller	0	Good	Excellent
W. F. N. 3	64	Prostate Hyp.	90 cc.	Hyper Both Lat. Middle	4-5	6	Slight	6	20 cc.	All 3 Lobes Smaller	1	Good	Fair
C. H McC. 4	55	Prostate Hyp.	25 cc.	Slight Hyper.	1-2	6	Improved	6	0	Normal	0	Good	Excellent
E. R. W. 5	50	Prostatitis	0	—	0	6	None	6	0	—	0	Slight	—
M. B. W. 6	53	Prostate	10 cc.	Median Bar	1	6	Slight	6	0	Normal	0	Good	—
W. R. A. 7	55	Prostate	20 cc.	Both Lat. Slight	2	6	Improved	6	0	Both Laterals Smaller	0	Good	—
C. H. W. 8	72	Prostate	90 cc.	Hyper. Both Lat. Middle	6-8	6	Slight	4	50 cc.	—	4	Died Cardiac Failure	—
W. F. S. 9	40	Prostatitis	0	—	0	6	Improved	6	0	—	0	Good	—
J. G. 10	45	Prostatitis	0	—	0	6	Improved	6	0	—	0	Good	—
D. D. 11	54	Prostate Hyp.	25 cc.	Small Median Lobe	2	6	Slight	6	0	—	0	Good	—
H. A. 12	40	Prostatitis	0	—	0	6	Slight	6	0	—	0	Marked Improve-ment	—
J. A. 13	48	Prostate Hyp.	15 cc.	Small Middle Lobe	1	6	Improved	6	0	No Change	0	Good	—
G. L. H. 14	58	Prostate Hyp.	10 cc.	Small Lateral Hyp.	1	6	Improved	6	0	Smaller	0	Good	—
J. S. 15	43	Prostatitis	15 cc.	No Hyper.	1	6	Improved	—	—	—	—	—	—
C. R. W. 16	60	Prostate Hyp.	25 cc.	Both Lat. E. Small Median	2	6	Improved	6	5 cc.	Slight Change	0	Good	—
W. H. McK.	61	Prostate	20 cc.	L. Lateral	1	6	Improved	6	0	—	0	Good	—

W. H. McK. 17	61	Prostate Hyp.	20 cc.	L. Lateral Small Median	1	6	Improved	6	0	—	0	Good	—	
H. H. B. 18	45	Prostatitis	0	—	0	6	Improved	6	0	—	0	Good	—	
J. E. B. 19	70	Prostate Hyp.	30 cc.	Both Lat. Enlarged Small Med.	3	6	Improved	6	15 cc.	Refused Cys.	1	Good	—	
E. C. C. 20	50	Prostate Hyp.	15 cc.	Slight Hypm. B. Lat.	1	6	Improved	6	0	—	0	Good	—	
H. B. C. 21	70	Prostate Hyp.	40 cc.	Both Lateral Lobes	3	6	Improvement	6	10 cc.	No Change	1	Good	Good	
J. C. E. 22	44	Prostatitis	0	—	0	6	Only Slight Improvement	—	—	—	—	—	—	
J. H. 23	72	Prostate Hyp.	50 cc.	Refused	5	6	Only Slight Improvement	Patient left city.					—	
W. H. E. 24	60	Prostate Hyp.	60 cc.	Both Lateral Lobes	3	6	Slight	6	40 cc.	—	2	Some Improvement	—	
T. S. 25	48	Prostatitis	—	—	—	6	None	—	—	—	—	—	—	
H. L. W. 26	61	Prostate Hyp.	20 cc.	Both Laterals Large	2	6	None	Patient refused further treatment.						

more pronounced response than pure testosterone. In other words, the esters cause a greater increase in the size of the comb and a greater increase in the weight of the secondary sex organs of the rat, and the maximum of these effects is attained later than is the case with free testosterone given in the same doses. Thus, the total effect obtained is relatively greater. Other esters, such as testosterone butyrate or palmitate, show this remarkable quantitative modification, either only or to a much more pronounced degree in the rat, while in the case of the classic test on the capon, the intensification is less noticeable. For clinical use, testosterone propionate, among the various esters, was chosen for its most pronounced as well as persistent action.[9, 10]

Formula 2

Prostatic hypertrophy can no longer be regarded as an independent entity. The inter-relationship between the testes, the anterior pituitary gland and the secondary sex organs are now clearly recognized, and we know that changes in one of these three are inevitably conveyed to the other members. Then if this is true, is it not possible that benign prostatic hypertrophy may be due to an endocrine inbalance.

REPORT OF CASES TREATED SINCE AUGUST, 1936

The cases are tabulated in order that the number (26) can be reviewed in the preceding chart which shows the changes after treatment of the most common symptoms and findings in these types of cases. In this series of cases only six failed to get any appreciable results. Most of the cases under 50 years of age had prostatitis, and one case was that of prostatic hypertrophy, 72 years of age, that had a serious cardiac complication, and who died during his second series of injections of perandren from cardiac failure. The patient, No. 8 on the chart, had come to me 20 years before and I had removed eight calculi from his bladder by litholapaxy. One case, a man 40 years of age, who had been under treatment and observation by me for the past five years and who had masturbated since 15 years

of age, had a definite psychoneurosis, and complained of total loss of sex desire and no erections. Examination by endoscope showed relaxed ejaculatory ducts, marked excitability of the posterior urethra, and by rectal examination the prostate was slightly enlarged but soft and boggy. Treatment given, while satisfactory from relief of symptoms in the urinary tract, his psychoneurosis still remained. In August, 1936, treatment with perandren was begun, giving 5 mg. every fourth day for 12 doses, and then a rest period of one month and a second series of perandren begun. The change in the mental attitude of this patient was greatly improved and his prostate per rectum was firm, normal in size and appreciably sensitive for the first time since coming for treatment. Slight erections began to occur at intervals and increased in duration and frequency. Treatments were continued twice monthly up to the present time, and the patient is much encouraged.

Testosterone propionate (Perandren) has been used in all of these cases in doses of 5 mg. and in every case the general tone of the patient was improved.

Discussion

The chemical contributions to biology were the stimulus and the means of bringing about new physiological investigations. Nevertheless, the physiological problems concerning the male hormone, its function in normal and pathological conditions, are too numerous and certainly too complicated to be solved in a short time. Many chief, basic questions, such as the uncertainty as to whether testosterone is the only hormone secreted by the testis, the relation of other hormones (estrogen, pituitary hormones, etc.), the influence of testosterone on the testis itself, recently discussed by Hamilton,[11] and many other problems, still need further elucidation.

Although testosterone propionate, or any other testosterone ester, has not yet been found in or isolated from the body, it has been demonstrated that it has a greater potency than the testosterone definitely isolated from the testis.[9, 10, 12] Thus, it is also an open question as to whether the organic acids can be identified with the so-called x-fraction of the testis which, as shown by David,[13] has an activating effect on the castrated rat. The oily solution of the propionic ester—testosterone, as well as its esters, is insoluble in water—is, according to the review read by Ehrenstein,[12] 12 to 17 times stronger than the oily solution of free testosterone. Its effect on the capon's comb and on the secondary sex organs in castrated rats is qualitatively the same, that is an increase in the weight of the seminal vesicles and the prostate gland is seen in those castrated animals which regularly would show atrophied organs.

Hamilton,[14] using perandren, has shown that in monkeys, in which cryptorchidism exists until puberty, it causes a descent of the testes after fourteen days. The effect of perandren in sexual underdevelopment has also been studied by Hamilton,[15] in the case of a 27 year old male, with remarkable results in the development of the sexual apparatus—the penis, the scrotum and the testes. Penial growth and the capacity of erections were also studied after the injection of the male hormone in monkeys, as well as in human beings. The author stated that the testosterone propionate used "produced growth, maintenance and function of the male reproductive tract."

Before final conclusions can be drawn in regard to the indications, dosage and method of treatment with this product, a long period of careful observations will be necessary, as already pointed out in the above mentioned papers. Its use in prostatic hypertrophy, a disease of age and involutionary period in man's life, is near at hand although the etiology of this disease and its connection with the functions are under contradictory discussion.

Zuckerman[16] has artificially produced prostatic hypertrophy in monkeys by injecting the follicular hormones. These prostatic effects of oestrone were suppressed by injections of substances with male activities. Testosterone propionate was shown to be the most powerful in this direction compared with testosterone and androstandiol (which, according to the explanation of the chemical nomenclature, is an androstan derivative with two hydroxyl groups).

Clinical improvement in a large percentage of patients with benign prostatic hypertrophy has been observed by Day and co-workers[17] and perandren was injected intramuscularly in more than 40 patients. The results are claimed to be very striking in some instances.

Recently, in a letter to the Editor of the *British Medical Journal,* in which he reported re-

sults exactly along the same lines as my own observations, Dowling[18] presented a case of prostatic hypertrophy treated with testosterone propionate.

In a paper recently published in the *Presse Medicale,* France, by LaRoche, Marsan, Bompard et Corcos, these French authors obtained the same encouraging results by using the acetate of testosterone as I have in this series of cases, except that these French patients were treated with the acetate instead of propionate. The French authors claim that they have seen tenesmus of the vesicle and of the rectum, accompanied by symptoms radiating to the urethra. In my series of cases I have not had any such complications, even in the cases in which 25 mg. of perandren at each injection was given.

CONCLUSIONS

1. Testosterone certainly has a definite place in the treatment of early benign hyperthrophy of the prostate, in a large percentage of cases.

2. In inoperable cases due to some serious physical disability, early prostatism should be treated with testosterone (perandren) and at least given a good fair trial.

3. Larger doses (25 mg.-10 mg.) have been used in a few cases, but I can see no advantage over the 5 mg. dose.

4. In cases of sex hormone deficiency testosterone will prove of great value.

I want to express my thanks to the Ciba Pharmaceutical Products, Inc., for providing me with the material which I have used in this work.

30 N. Michigan Avenue.

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CONGENITAL ATRESIA OF THE UPPER VAGINA WITH RETAINED MENSES

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Gynatresia or closure of some portion of the genital tract is a rather uncommon condition and but briefly mentioned in most textbooks. Vulval astresia due to agglutinations of the labia minora is not infrequent in infants and girls of preschool age. Vakar in 1930 and Nowlin and Adams in 1936 reported cases of atresia vulvae. The condition seemed to be acquired rather than congenital; certain of the cases were asymptomatic and others produced symptoms of urinary obstruction.

A more frequent site of closure of the genital tract is in the lower portion of the vaginal canal, and the obstruction may be unassociated with symptoms until the onset of menstruation. Brown studied 50 cases of congenital retention of menses and in 41 instances the obstructive membrane was situated at the junction of the vulva and vagina. Less frequently the obstructing membrane is higher in the vagina or perhaps in the cervix.

At the vaginal orifice two types of membranes may produce obstruction, 1, a membrane above a normal hymen, and, 2, an imperforate hymen. Taussig feels that the thickness of the atresic membrane and the absence of agglutinations higher up suggest that the condition is not a result of infectious agglutination but rather an overgrowth of hymenal connective tissue.

There is a variety of opinion as to the etiology of gynatresia. Nagel and Frank believe most, if not all, atresias and stenoses are acquired and are due to injuries or inflammations occurring

in postnatal life. Cases of gynatresia of the acquired type may result from infectious diseases, puerperal infections and lacerations, trauma, senile changes and mechanical occlusion from within or without the genital tract.

The most common congenital obstruction of the vagina is generally regarded as an imperforate hymen. Complete absence of the vagina

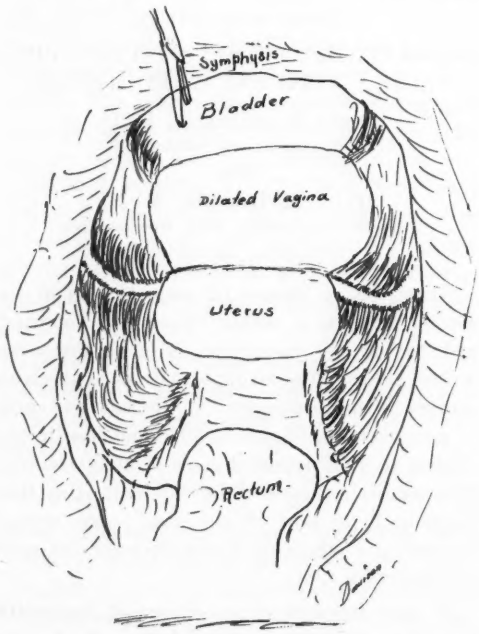

Fig. 1. Note the distended vaginal vault as it appeared when the abdomen was opened.

of congenital origin cannot, according to Nagel, exist with normal pelvic organs. Novak concurred in this view, since in six cases of congenital absence of the vagina reported by him the uterus was absent.

Gynatresia from any cause generally produces no symptoms until the inauguration of menstruation, and attention may first be directed to the condition because of failure of the menses to appear at the usual age. Sooner or later there is actual pain at the monthly periods, often colicky in nature. As the condition advances to development of hematocolpos, hematometra and hematosalpinx a tumor is observed in the lower abdomen. Secondary infection of the retained blood and peritonitis are occasional sequelae.

We are reporting in this paper a case of congenital atresia of the upper vagina with retained menses observed in a girl thirteen years of age. There was apparently no other anomaly of the genital tract. Jackson in 1928 reported a case with similar findings. Figure I is a drawing of the structures in the pelvis as they appeared at the time of the last operation. Figure II is a photograph taken after restoration of the vagina.

CASE REPORT

L. S., a girl aged 13½ years was first seen by us December 29. 1937, because of cramping pains in the lower abdomen. The father and mother and two other girls in the family were alive and well. The mother had had only the three pregnancies. The family history was essentially negative. There were no anomalies in living members of the immediate family.

The patient was born at term, delivered normally, weighed eight pounds at birth and was a well baby. She teethed at 10 months, sat up at seven months and walked at 15 months. She had measles, whooping cough and chicken pox. At 15 months of age she was reported to have had typhoid fever and a severe "bowel impaction." At five years of age she had pneumonia and at nine years of age scarlet fever. She had never menstruated.

Fig. 2. The vagina as it appeared after perforation of the hymen and subsequent dilatation.

She was perfectly well until June, 1937, except for some listlessness and fatigue during the preceding year. At this time she developed pain across her lower abdomen with nausea and vomiting. She was taken to a hospital because the condition at first was thought to be appendicitis. After a few days the condition at first was thought to be appendicitis. After a few days she improved and was discharged. On August 17 the cramping pains across the lower abdomen recurred.

She had no fever. Two days later she was again hospitalized because of persistent cramping, nausea and vomiting, and an exploratory laparotomy was done. Large blood-filled cysts were found to involve both ovaries, and the tubes were distended with blood and not well defined. Bilateral salpingo oophorectomy was done. There was a mass in the region of the uterus and the possibility of a uterine anomaly was considered by the surgeon at that time. She made an uneventful recovery and was discharged from the hospital on August 30. After surgery she received an ovarian preparation by injection every two weeks.

She remained quite well until December 27 at which time a similar attack of abdominal pain occurred, that was severe and cramping with nausea and vomiting. There was no fever. Two days later she was admitted to the hospital and was first seen by us. The examination was essentially negative except for a large pelvic mass palpated rectally. This mass was hard and considered to be an ovarian cystoma, probably a dermoid. Urinalysis at that time was negative. The blood count showed hemoglobin 80%, erythrocytes 3,616,000 and leukocytes 8,650. An exploratory laparotomy was advised and performed on December 30 by one of us (H. L. D.) under ether anesthesia. The scar of the previous low midline incision was excised and a right paramedian incision made. The bowel was matted together with adhesions. The uterus was normal in size but at its lower end a large mass about the size of a small grapefruit protruded anteriorly and posteriorly. The bladder was small, collapsed and overlaid the uterine mass. There was no apparent line of cleavage between the uterus and the mass below it. Since both tubes and ovaries had been previously removed it was decided to remove the uterus in order to find a line of cleavage. On incision of the mass during the process of hysterectomy, a large amount of chocolate colored material resembling blood gushed forth and it was then realized that the mass was the vagina distended with blood. The uterus was removed in the usual manner and the fringe of vagina was readily seen about the cervix. The uterus was not anomalous. The vagina was thoroughly evacuated and an effort made to pass a forceps into it but firm obstruction was encountered. At this stage an assistant examined the vagina from below; he was unable to introduce his finger because of complete vaginal atresia. The vault of the vagina was closed and the appendix removed. The abdomen was then closed and the patient placed in the perineal position for examination of the vagina in more detail. The hymen was imperforate and a small forceps was used to enter it. This was easily accomplished and a slight relaxation noted as the membrane was perforated, there being a small cavity above the hymen representing the vagina. This cavity was 1 cm. in diameter. Beyond this there was no visible opening. One finger was inserted and pushed back the length of an index finger but this was not enough to contact the dilated vaginal mass. Two fingers were inserted to dilate the occluded tract more completely. The complete occlusion extended for a distance of about 4 cm. No attempt was made to do a plastic repair of the vagina at this time since the operation had been prolonged. She made an uneventful recovery and was discharged from the hospital January 5, 1938.

Later in January, 1938, a more complete examination was done in order to look for other anomalies. On January 29, 1938, the urinalysis was negative. The blood count showed hemoglobin 71%, erythrocytes 3,670,000, leukocytes 5,400 of which 42% were lymphocytes, 6% monocytes, 51% neutrophiles and 1% eosinophiles. The Kahn test was legative. The basal metabolic rate was +6%. The fundus examination was negative. Roentgenologic studies of the chest and stomach were negative. Studies of the kidneys, ureters and bladder following injection of skiodan showed duplication of the right kidney pelvis.

COMMENT AND DISCUSSION

Judging from reports in the literature and text-book discussions gynatresia is not a common condition. In most instances the obstruction is in the lower one-third of the vagina and is often located at the vulvo-vaginal junction. The most common cause of atresia is an imperforate hymen, and in those cases with retained menses the hymen may often be seen to be purplish-red and bulging. Simple incision of the obstructing membrane with evacuation of the retained old blood will often relieve the condition. Stenosis or atresia higher in the vaginal vault is more rare and the symptoms arising from visceral distention by retained menses are not typical. These factors make diagnosis difficult and unless it is borne in mind that such a condition occasionally does occur it will not be diagnosed prior to laparotomy. The occurrence of periodic cramping abdominal pains in a girl 13 to 15 years of age associated with absence of menstrual flow and perhaps a lower abdominal tumor should bring gynatresia and retention of menses to mind. Careful examination of the vagina is important, but obviously in the cases of high obstruction the occurrence of a normal appearing hymen may be misleading. Under such conditions more careful vaginal examination under anesthesia may be indicated.

We have reported herein a case of vaginal atresia in which the obstruction occurred in the middle one-third of the vagina and lay above an imperforate hymen. The atresia extended for a distance of 4 cm. and was associated with hematocolpos, hematometros, hematosalpinx and

hemorrhagic ovarian cysts. The uterus was not anomalous.

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WILLS AND TRUSTS

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After a number of years of service with The Northern Trust Company, one ought to possess such a fund of experience and of interesting anecdotes that he should require no notes. Unfortunately, they do not train trust officers to public speaking and an unskillful speaker is apt to lose his place, employ too many words and fail to cover his subject properly. Hence I come before you with a sheaf of typewriting which I only hope will not be boresome. If it is, I may be in the position of a certain Lord Hartington of Mr. Gladstone's cabinet, who once addressed his constituents with a written speech and while delivering it he paused and yawned. He immediately apologized to his audience, saying he really couldn't help it because the speech was so *dull!*

Wills are usually the record of a man's thoughtful regard for his dependents, expressing his wishes for their protection according to their special capacities and needs. Upon occasion they may be cold, cruel documents, giving vent to the maker's spleen against individuals or society in general by airing some pet grievance. Perhaps less usual are the wills imposing some whimsical fancy like the recent stork race in Canada that led to legal difficulties and no end of babies.

There are two wills of this whimsical type that show the extremes to which men may go in extending their dominion after their lifetimes—both are founded in fact.

Not many years ago, there was a sportsman in Toronto who because of his business activity had been in continual "hotwater." He owned and operated a race track and ran a string of horses. In addition, he was the principal owner of a brewery. It seems that the Catholic Church had been active in trying to curb his racing activities and the gambling among the parishioners which was diverting their earnings in his direction to the detriment of the families and church. The Methodists were exceedingly zealous in their attempt to dry up the province and did their best to remove the sordid influence from their midst that flourished on the products of the brewery.

One may imagine the perhaps malicious satisfaction this bachelor-sportsman had in preparing his will and providing thereunder for the objects of his bounty. Upon his death it was discovered that in his will the stables and race track were left in trust to the Catholic Bishop! The Methodists were also provided for, receiving under the will the stock of the brewery which was held for them in trust. If either refused to accept the revenues derived from the business held in their behalf or in the event of a subsequent sale of the assets, then the property went to other beneficiaries. Presumably this Canadian sportsman had hoped to bait the two institutions that had harassed him for so many years during his life, or perhaps he thought to test the sincerity of their convictions to a point where it became necessary for them to either shut their eyes to needed revenue or stand by their principles and renounce.

Contrary to the usual provision regarding marriage that one ordinarily finds in a will, a certain Englishman took what seems to me to have been an unfair advantage of his wife in so public a document as a will. By the terms of this instrument, he provided an annuity of 1,000 pounds to his wife for life provided, however, that if she remarried, then the annuity should be increased to 2,000 pounds per year. He stated that he chose this method of rewarding his successor as husband to his wife, feeling that no doubt the new husband's life would be substantially shortened by reason of this marriage as he felt that his wife had driven him to an early grave. It isn't everyone that gives his successor such a break.

Read before North Shore Branch, Chicago Medical Society, January, 1938.

However, these oddities have but little to do with our more serious purpose of discussing wills as a medium for the transfer of capital wealth. The earliest will extant bears the date of 2548 B. C., more than 4,000 years ago and is Egyptian. This will was unearthed by William Petrie, the famous Egyptologist, and is now a part of the archeological collection of the Museum of London University. A portion of a translation of this Will reads as follows:

"I, Uah, am giving a title to property to my wife, Sheftu, the woman of Gesab, of all things given to me by my brother, Ankh-ren. She shall give it to any she desires of our children she bears me . . . It is the deputy Gebu who shall act as guardian of my son. Done in the presence of these witnesses . . ."

It will be noted that Uah made his will in quite the modern manner and conformed so largely to our present conventions that his will might almost be granted probate today. He gave his wife an interest for life in the property which he received from his brother and limited his wife's power to give this property only to their children under her will. Uah named a guardian and executed his will in the presence of witnesses. He used many of the devices currently employed to expedite the disposition of property and to minimize taxes.

In spite of the long period in which wills have been used as a medium of passing men's estates from one generation to another, people do not have the inherent right to give away their property by will. Both the State and Federal Government have something to say about it. The Federal Government says, "In order that you may have the right to give your property to some one other than to me, I will tax your right and your estate must pay me." Today the Government's arresting hand lies heavily upon many estates and the tax in many cases becomes a considerable item.

The State, too, exerts its influence by saying that you may leave your property by your will if you wish, but if you don't make a will, it has one already made for you that will name your beneficiaries and say how much of your property they shall receive. Moreover, if you make a will the State insists that it conform to certain requirements of State Law; the State says that you cannot exclude your wife or husband under the terms of your will; that if children have not been excluded specifically as a class, that children born after the date of the will shall take proportionately with other children as if you had died without a will. In some states, particularly in California, the law says that you may give only one-third of your estate to charity if there are legal heirs and a charitable bequest will fail entirely if the will be drawn less than 30 days before the death. Our State also says to the heirs, "In order that you may receive property, I shall tax you on that right in accordance with your relationship to the decedent." To the property owner the State says, "If you leave no will nor next of kin, your property shall escheat to me." And, the law also protects the right of your creditors and says before your heirs may have any of your estate, you must pay your just debts.

This leads me to the confused state of mind of quite a few people to whom I have talked relative to their immediate rights in the property left by their husband, wife or some near relative. Contrary to the impression of many, a decedent's property does not pass immediately to his or her heirs. The law in Illinois requires an interval of at least a year in which the claims of creditors may be presented, in which a surviving spouse may elect to exercise his or her dower rights and in which taxes, both Federal and State, may be assessed. The law requires that title to the decedent's property be held by an officer of the Probate Court, an Executor if named in the will, or an Administrator appointed by the Court, if not so named. Thus the rights of the heirs to the estate are postponed and are subject to claims that come in ahead of their interests.

This lack of understanding on the part of heirs concerning the procedure made necessary by the law and particularly the disastrous results from utterly disregarding the law relative to the disposition of property in order to suit one's own convenience is exemplified in this situation: A Chicagoan had during his lifetime created a Living Trust with one-half of the stock in his corporation for the benefit of his sisters, and after their lifetimes for the benefit of a charity. He named himself and one of his sisters as Trustees and provided that the Trust could be revoked by giving notice in writing to all the beneficiaries. Since the Trust was revocable, the income was legally taxable to him, although he never thought so for he never paid it. In 1935

he revoked the Trust, but gave no notice to anyone—not even to the Co-Trustee who never released the stock—and reissued the certificates in his wife's name, dating the tranfer prior to June 6, 1932, presumably to avoid gift tax.

Now that he has passed on, who owns the stock—the trust which was not properly terminated and under which the sisters and the charity have a claim, or is it the wife? What will the income tax and penalties be? Or, if a valid gift was made to the wife, what about the delinquent gift tax? Or, perhaps the stock is a part of his estate for tax purposes if the gift fails.

This man's will presented equal difficulties with problems resulting from acts made for the sake of convenience during his lifetime. His only property was the corporation, but the corporate assets were found all in his own name, stocks, bonds, mortgages and real estate. He borrowed over $100,000 from the corporation, but insisted in his will that this was not to be a claim against his estate—and now his wife says, "Let's forget all this and have a new deal, dividing the property among my children and my husband's sisters and myself in some equitable manner." Obviously, the law cannot be circumvented because it suits one's pleasure to ignore it.

But enough of gossip—what is a will? It has been defined as a legal declaration of a person's wishes regarding things that he may request or may require to be attended to after his death. It is not wholly correct to say a will is a written instrument—it may be declared orally and may not be reduced to writing until after the testator's death. It is not always sufficiently inclusive to say that a will relates to the disposition of one's property after death—a valid will may constitute only a statement naming an Executor or Guardian.

Who may make a will? The legislatures of the various states decide. Here in Illinois anyone of legal age and sound mind may make a valid will. The legal age for men in our State is 21 and for women, age 18. A will made when one is of sound mind will be accepted for probate even though the maker of the will later becomes insane. Where there is a doubt of a person's mental capacity, it has proved of value upon more than one occasion to preserve the old will, which may be probated in the event that the new document is adjudged invalid.

Just what constitutes proof of a person's testamentary capacity? In most states a person can make a valid will 1. if he comprehends the nature of the transaction in which he is engaged; 2. if he recollects the property of which he disposes; 3. if he recollects persons who would be supposed to have claims upon him; 4. if he comprehends the manner in which the will will distribute property among the objects of his bounty.

There are eight kinds of modern wills. Only three, however, that are used in the United States and England are of interest to us; the other five are used in civil law countries. The wills in use in the United States and England are the holographic will, the nuncupative will and the ordinary will. The holographic will is one written entirely in the handwriting of the maker or testator and does not require subscribing witnesses. Since this type of will is not recognized in Illinois, we can dismiss it.

A nuncupative will is an oral will and usually arises out of emergencies, as in the case of a civilian who is conscious of approaching death, or for a soldier or sailor in time of war, who, when wounded, has no opportunity to make a regular will. In Illinois such a will may be used to pass title to personal property but not to real estate. The maker of the will must declare his wishes before two witnesses, and his statement of the disposition of his personal estate must be committeed to writing within 20 days of his spoken instructions and within 10 days of his death. The written statement must be subscribed to by two additional witnesses. It also follows that the testator must die, for if he recovers he, of course, has the opportunity to make a regular written will and, therefore, this temporary spoken will becomes ineffective.

Now we come to the so-called ordinary will which may be either handwritten, typewritten or printed by the testator or by someone else. It may be written by pen, pencil, or typewriter and in any language. Long ago it was the custom to have such a will written in longhand in order that there might be no alteration or substitution of the pages. Only the other day we had a client come into the bank who is now in his seventy-eighth year and who still persists in clinging to his old-fashioned idea of penning out his rather lengthy will at intervals of every two or three years. Today, in order to avoid the substitution of pages or alteration of paragraphs, it is cus-

tomary to have the testator sign each page of the document to identify it.

An ordinary will must be signed by the testator or by someone for him at his direction. For example, the testator may make only an "X" at the place for his signature, or may have someone else sign for him as "John Doe by the hand of Richard Roe." If a testator is either illiterate or blind the will should be read aloud to him in the presence of the witnesses. Under ordinary circumstances, however, a will need not be read to the witnesses, but the testator must tell them that it is his will and ask them to sign it. In Illinois there must be at least two persons who sign as witnesses in the presence of the testator and in the presence of each other. It is usually advisable, however, to have three witnesses, for one never knows when a will may be declared invalid because the necessary number of subscribing witnesses have not attested the testator's signature. For instance, if a resident of Illinois owns property in Florida and leaves the property to a member of his family, the will could not be admitted in Florida if only two witnesses had been employed, for the State of Florida requires that there be three.

It is of the utmost importance that the witnesses to a will shall not be financialy interested in the estate. A witness who is also a legatee will forfeit his or her legacy and a testator, therefore, should never have his will witnessed by his wife or child or any member of his immediate family, nor by the husband or wife of any of the legatees, nor should a stockholder of a corporation who is named either as Executor or Trustee be permitted to subscribe his name as a witness.

A will should not be permitted to refer to outside documents except that it identify such documents exactly and specifically if they are to have any legal effect. There is a rather interesting case in point known as the Bennett Will case. Mr. Bennett was a very well-to-do man living in the East. He was a great admirer of the late William Jennings Bryan and adhered to Mr. Bryan's theory of sixteen to one money, as well as to other thoughts propounded by the Silver-tongued Orator. Because of his wealth and because of his associations in business, Mr. Bennett did not want it to become known that he supported Mr. Bryan and yet under his will he desired to leave a substantial amount to Mr. Bryan and his cause. As you know, a will is a public document after the testator's death and in order to avoid an open declaration, Mr. Bennett referred in his will to a letter that would be found among his personal effects and requested that the terms of the letter be followed by his Executor. Upon Mr. Bennett's death, it was discovered that the letter provided a handsome munificence to the great Nebraskan, which Mr. Bryan sought to collect. The reference in the will, however, was not to a specific letter that could be accurately identified, and as it might have been any other letter, it was not admitted to probate and Mr. Bryan lost his bequest. Incidentally, Mr. Bryan who was a lawyer had prepared the will and should perhaps have known better. At any rate, he was subject to a bit of badgering by his brothers at the Bar, for it was not wholly ethical for him to prepare a document of which he was a beneficiary.

The manner in which a will may be changed is of some importance. I have had presented to me many documents which have been altered by interlineation. Frequently, men will cross out certain sections of their wills and substitute new provisions in their own handwriting. These changes that are made after the will has been executed and witnessed are not valid and will not be admitted in probate. The only safe way to make a slight modification to a will is by a codicil, which in itself is a sort of will, although actually an amendment to one. A codicil must be executed with all the formality of the will itself and should acknowledge, republish and confirm all parts of the will that are not changed. If a substantial modification of a will is to be made, it is only proper that a new document should be drawn.

A testator may revoke his will or codicil in a number of ways, by a written instrument executed with all the formality of a will which expressly revokes his will or codicil, by tearing, burning, mutilating or otherwise physically destroying the instrument with the intention of revoking it, or he may make a new will which expressly revokes all former wills and codicils. If a later will fails to expressly revoke all former wills, it will not revoke previous wills except insofar as they are inconsistent with the last will. In this State, if the testator marries after he has made a will, the marriage is sufficient to revoke the will. Children born after the date of making a will will not in Illinois revoke the will executed

prior to their birth. Such children, even though not mentioned specifically will take proportionately with other children born prior to the making of the will unless there is specific language purporting to exclude such children as a class. It is not necessary that a testator set forth in a will an enumeration of his property, although if he does, his will may be nullified in part if he has conveyed some of his property subsequent to its execution.

One sometimes hears a person say, "I will not make a will because it can be broken." Actually, it is very seldom that contests of wills really occur. People gain a contrary impression because the wills that usually find their way into the news columns are those that have been subject to a contest and one usually loses sight of the thousands of wills that pass through the Probate Court and perform their regular functions without having gained any notoriety at all.

There are, however, six usual grounds upon which a will may be contested. They are:

1. That the will or codicil was not legally executed; i.e., not properly witnessed.
2. That the decedent did not have testamentary capacity at the time of execution; i.e., was not of sound mind.
3. That the execution was procured by undue influence; i.e. testator was cajoled into favoring someone against another.
4. That the execution was procured by fraud; misrepresentation.
5. That the instrument is a forgery.
6. That the instrument has been revoked by a subsequent will.

It is true that when a person seeks to make an unnatural disposition of his property that his will is vulnerable to a contest. Some contests are actually a racket employed by unscrupulous individuals or lawyers. I am mindful of a very recent situation where a wealthy Chicagoan left his entire estate to a number of charities. The man died without a wife or any children, leaving only some distant relatives for whom he believed that he had provided adequately during his lifetime. It was not until one of these relatives had been pressed unduly by a lawyer that he was finally induced to sway a number of other possible claimants to the decedent's will to bring a suit contesting the validity of the will.

Now it is common knowledge among attorneys that in a contest on a large estate a jury will find in favor of the supposedly maltreated relations rather than in behalf of large charitable organizations. If the case is appealed and ultimately taken to the Supreme Court of the State, it is usually a matter of from three to five years before the litigation is at an end. In the meantime, the charities, if the will is held to be valid, have been deprived of the benefits of the gifts made to them and enormous legal fees have been incurred. The knowledge of these facts weighs heavily in the favor of the complainants and their attorney knows that frequently a profitable settlement will be made rather than to wage an expensive and prolonged battle in the Courts. So it was in this case that I mention that a settlement was finally arranged for slightly more than the estimate of the cost of from three to five years litigation, and the litigants benefited to the extent of almost $100,000.

One of the most startling and dramatic will contests in local history was that of James C. King. The case ran its course in the courts of Chicago and in the newspapers for many years. Mr. King died in 1905, leaving a large estate for the purpose of founding a home for old men. Shortly after his death, there was a contest over a marriage settlement with his widow which was finally settled. The widow subsequently came under the influence of one Gaston B. Means, whose name is probably familiar to most of you. In 1915, Mr. Means purported to have found among some papers in an old tin box a will executed by Mr. King only a short time before his death. This document was practically identical with the will which was presented for probate with the exception that after certain bequests the remainder of the large estate was given to the wife instead of the home for old men.

For a long time Mr. Means did not show this will but simply talked about it. In 1917, however, he presented the will and it was noted that among the witnesses to Mr. King's signature was the name of Mr. Byron L. Smith, who in 1905 was President of our trust company. All of those in the bank who were familiar with Mr. Smith's signature unhesitatingly pronounced it a forgery.

It has never been quite clear just what use Mr. Means intended to make of this will;—possibly to keep Mrs. King pacified under his management or to use it to effect some compromise settlement with the bank and the home for old men which by this time had been established. After

this interview, Mr. Means took the will away with him and left it with a lawyer in New York City without attempting to probate it.

In August of 1917, Mrs. King and her sister, Mr. Means and some friends went in a party to North Carolina to the home of Means. Here the party seems to have taken up target shooting as a recreation. While engaged in this, in some way Mrs. King was shot in the back of the head. Testimony showed that at the time Means had his back turned and was getting a drink at a spring. Mrs. King was rushed to a hospital, but died before arriving there and at the inquest it was decided that death had been accidental at Mrs. King's own hand.

During the period of the war, Gast n Means had come under the surveillance of the Federal authorities because of suspicion that he was doing secret work in German interests. The government searched all of his papers and among them was the will which was forwarded to the Probate Court in Chicago. This court immediately precipitated the probate of the will and Means had no other alternative than to fight the matter through the court as best he could.

There followed a period of long drawn out legal proceedings in the Probate Court and it was demonstrated that Mr. Smith's signature as a witness to the will was not his own since on the day that he was supposed to have signed the document he was away on a motor trip in New England.

I shall not attempt to go into the contents of a will. This is a field that should be specifically reserved for one of the legal profession and there is yet the subject of Trusts to be touched upon.

As to Trusts, a Trust is defined as a confidence reposed in one person with regard to property held by that person for the benefit of another. There are many kinds of Trusts, for example, personal, corporate, community, institutional, and industrial, but we are only concerned here with personal Trusts. Personal Trusts have been classified from various aspects, but time permits the mention of only the two most common forms of but one of the classifications, namely, Trusts created by Wills and Trusts created by contracts, otherwise known as Testamentary Trusts and Living Trusts.

At this point, I should like to say something about the size of Trusts that are practical for the administration of trust companies and that are of value to the beneficiaries for whom they have been established. We are frequently called upon to accept Trusts of five, ten, fifteen or even twenty thousand dollars that are supposed to care for and protect a man's wife and children. When it is realized that even under more favorable investment conditions than exist today the few hundred dollars of annual income that may be obtained from a small Trust is wholly inadequate to meet the minimum living requirements of the family, it becomes apparent that it is unjust to deprive the beneficiaries of the use of the principal itself and that some other medium than a Trust must be found to solve the problem. Few metropolitan trust companies can profitably administer a Trust of less than $50,000. This statement becomes quite reasonable when one appreciates that the annual fee for a $50,000 Trust in Chicago is usually $250. This fee is supposed to cover the expenses of management, investment research and analysis, custody of the securities, collections and disbursements of income and principal, maintenance of adequate records of account, statements, clerical hire and the time of administrative officers in considering the problems presented by the Trust assets, together with the personal contacts with the beneficiaries. All of these functions must be performed in an account of less than $50,000 and I submit where in the world can you find anyone who can afford to hire himself out for a full year to perform all of these services at an amount of less than $250, particularly where one accepts the responsibilities imposed upon a Corporate Trustee by the Laws and the Courts of the land.

Now let us return to the subject of how Trusts under wills are created. A testator, or the maker of the will, has the choice of leaving property outright to his contemplated beneficiaries or of leaving it in Trust for them. Legally, a testator may give in Trust any kind of property that he may give outright.

Except for the limitations imposed in some states upon gifts for charitable purposes, a testator may create a Trust under his will for the benefit of any person or institution that is capable of owning property. The inability of an individual to manage property in no way affects the right of a testator to create a Trust for that individual; in fact, minors and incompetents are among the chief beneficiaries of Trusts.

Some of the purposes for which Trusts under Wills are created as as follows:

To hold the family together: first, by preserving the homestead; second, by relieving the mother from the duties of property management for which she may be fitted neither by aptitude nor experience, thereby releasing her energies to be devoted to the requirements of the home and the care and upbringing of the children; and third, by supplying the income requisite to maintain a normal standard of living.

Let me expand this last point: If a man divides his property between his wife and his children, the portion of any child who has left the family circle through marriage or otherwise is at once withdrawn from the family estate. The portion of any minor is kept separate by the Guardian and is used exclusively for that child's benefit under the supervision of the Probate Court. Thus, an estate which, if handled as a unit, would have been ample for the requirements of the family as a group becomes inadequate when split up and used for the separate requirements of its various members.

Another purpose served by Trusts under Wills is to meet the special requirements of children as members of society and not merely as members of a family. In the absence of a mother, it may be necessary for the Trustee to take her place in caring for the special requirements of the children, whether their requirements be of a financial, personal or individual nature. A testator may make the terms of the Trust sufficiently elastic to permit the Trustee to advance or withhold income, to encroach upon principal, to apply the income or principal for the benefit of the child instead of paying it to him direct. A Trustee may be authorized to continue a Trust until the child reaches a mature age or meets the requirements specified by the testator.

Still another purpose for which Trusts under Wills are created is to enable the testator to bestow the benefits of property without conveying its burden of management.

A Trust created under the terms of a Will does not become operative until after the death of a testator. This is opposed to the second named type of personal Trust which is known as a Living Trust, which becomes operative during the lifetime of the creator of the Trust and may continue after his death.

Ordinarily, a Living Trust is created by one person for the benefit of another, the property for the Trust being delivered to a third party, as Trustee; the owner, on the other hand, may declare himself as Trustee for the beneficiary. Not infrequently the owner of the property creates a Trust for his own benefit, but he may not act as Trustee for himself, alone, for he then becomes the absolute owner, having both the legal title and the equitable title and hence is discharged of the attempted trust.

Living Trusts, if classified according to the rights retained by the creator of the Trust, may be either revocable or irrevocable. Under a revocable Living Trust the maker of the Trust reserves to himself, alone, the power to bring the Trust to an end and to recall his property and again become its absolute owner. Revocable Living Trusts are the most commonly used, although recently because of the greater savings in taxes afforded by the irrevocable Trusts, the latter have had a greater vogue.

Obviously, under an irrevocable Living Trust, the maker of the Trust has given up the power of revocation. However, there are degrees of irrevocability. For example, "A" may agree that he cannot revoke the Trust created for "B's" benefit, without "B's" consent, or, "A" may make the Trust irrevocable for a term of years and revocable thereafter, or he may make his power of revocability contingent upon the happening of a certain event, say the death of "B," or he may make the Trust irrevocable unless he gives notice of his intent in one year to revoke the Trust in the next succeeding year.

If there is no provision in the Living Trust regarding the right of revocation, the Trust may be considered irrevocable, particularly if the beneficiaries are minors, or if contingent or undetermined persons such as unborn grandchildren may take under its terms.

The power to amend a Trust Agreement is the power to change its terms. This right may always be retained, both under a revocable and irrevocable Living Trust, but it is not usually reserved under the irrevocable form as such a power would forfeit the opportunity to procure certain tax exemptions.

It has been held to be against public policy to permit property to remain for too long a period in trust. The law has, therefore, placed certain restrictions upon the duration of trusts which may be found in the rule against perpetuities. In

Illinois the rule is fairly liberal; trusts made for the benefit of charities may continue forever. However, those established for individuals are limited to a period not exceeding lives in being and twenty-one years thereafter.

Just as the law looks with disfavor upon the trusteeing of property for the benefit of individuals for too long a time, it also looks with disfavor upon the accumulation of income for too long a period. In Illinois the statute against accumulations permits income to be withheld during the minority of a child or for a period not to exceed twenty-one years in any event. Both under the rule and the statute the period starts in the case of a Living Trust from the date of the Trust and in case of a Will from the date of the death of the Testator.

A fundamental distinction between the effect of a violation of the rule against perpetuities and the effect of the violation of the statute against accumulations is that in the case of the former, the Trust may be rendered entirely void, while in the latter situation it may merely accelerate the distribution of the income.

Just how long a Trust should continue may only be determined by the facts surrounding the purpose for which the Trust was created and the requirements and capabilities of the beneficiaries for whom it was established. Each situation is necessarily different, but when the needs for the protection to the beneficiaries, the experienced management of the trust properties, the friendly counsel and discretion of the Trustee cease to exist—then also does a Trust cease to serve a social and economic purpose.

LOCAL TREATMENT OF ARTHRITIS BY INUNCTION; A NEW METHOD OF APPLYING HISTAMINE

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Among the early investigators of the relationship between rheumatic and arthritic disorders and abnormalities in the capillary circulation were Bisset and Woodmansey.[1] They examined and photographed the capillary beds of the nails of more than 100 patients who had fibrositis and arthritis; 36 normal subjects were studied as controls. The results were reported in 1932. Circulation in the capillary beds of the normal individual was characterized by "1. Uniform well-filled frontage of thick loops (average diameter —i.e., distance across—0.05-0.06 mm); 2. Usually a large proportion of curled loops; 3. Loops are short—i.e., they ascend and descend quickly from the arterioles and the venules; 4. Frequently the thick epidermis prevents a well-defined picture."

The capillary beds of the rheumatic patients showed circulatory deficiencies, "1. A paucity of loops; 2. Considerable attenuation present in all cases and consequent tendency to discontinuities; 3. Usually (but not in all cases) long, straight loops parallel with and close to the surface, which permit in general, a clear, crisp photograph. There appears no doubt that in most, if not all, cases of well-established rheumatic conditions the capillaries are in a spastic state. . . "

In conditions characterized by diminution of circulation in local areas, such as rheumatic and arthritic disorders, dilatation of the capillaries in the affected parts should be of benefit. Histamine, beta-iminazolylethylamine, causes dilatation of the capillary bed when introduced into the human organism in even extremely small doses. A year before the report of Bisset and Woodmansey on the circulatory abnormalities of rheumatic patients, Deutsch[2] had reported encouraging results from the use of histamine in the treatment of myalgia, sciatica, arthralgia, traumatic myositis, and arthritis deformans.

In 1933 Bisset and Woodmansey[3] reported on the electro-phoretic administration of histamine to rheumatic patients. This method was chosen because it is agreeable to the patient, there is definite penetration into the tissues, a purely local effect is obtained. Histamine is inactive by mouth and uncontrollable by injection. At the positive pole, through which the histamine solution was introduced, an extensive wheal arose, roughly conforming to the shape of the electrode, surrounded by a zone of erythema. Despite the rather alarming appearance there was no pain; in fact, a feeling of anesthesia occurred in joint and muscle areas previously painful on motion. Improvement occurred in osteoarthritis, particularly of the smaller joints, arthritis of the knee, chronic articular gout, and fibrositis, especially of the chronic type. Pain was lessened, swelling and deformity decreased, and motion was less restricted. The results were attributed to the increased blood supply occasioned by the histamine.

Within the next year many reports were pub-

lished concerning the value of histamine in rheumatic disorders. Shanson and Eastwood[4] stated that while histamine was of definite benefit, therapeutic effects following ionization were generally absent. They considered the administration of histamine by injection to be preferable, beginning with 0.1 mg. and increasing the dose by 0.05 mg. daily until a satisfactory response was obtained. The effective dose was then injected two or three times a week and increased as necessary to maintain the response at a satisfactory level. Bisset discussed their report in a letter[5] and pointed out that he had given more than 3000 successful ionization treatments with histamine. Other investigators[6] including Bettmann, Dzsinich, Kaeppeli, Schapira, and Trumpp, had also reported successful results with histamine by ionization.

Mackenna,[7] who had published many papers on the treatment of rheumatic and arthritic disorders, employed a histamine ointment both by iontophoresis and by massage. In the iontophoretic treatment he found the ointment preferable to histamine solutions; massage with the ointment was beneficial, but it was found that "on the whole, results are less satisfactory than when ionization is used, but where massage is desired, histamine can advantageously be employed, and it may safely be used in cases of failing compensation which cannot have ionization." Mackenna has several times since voiced similar conclusions in other reports.

About the same time that Mackenna's report appeared, there was one by Kling[8] describing the successful treatment of rheumatic and arthritic disorders with histamine by iontophoresis. A later report by Kling[9] on histamine by iontophoresis dealt with its use alone or in combination with other measures.

Rumbaugh[10] applied an improved histamine ointment, Imadyl Unction,* by massage and by iontophoresis. His results were satisfactory. Recently Young[11] reported his results using the same preparation but applying it by simple massage alone. He comments that "the chief criticism of the local application of such compounds (vasodilator drugs) by the galvanic current is the time and the special apparatus required to administer the treatment. The patient must visit the physician and allow about thirty to forty-five minutes for the treatment; the time and the expense is usually of sufficient magnitude to discourage many patients or at least cause them to take fewer treatments than are necessary to obtain the best results. The ideal treatment, therefore, is some method which requires no special apparatus and which can be employed by the patient either daily or every second day." Sixteen cases of chronic infectious arthritis and ten cases of chronic hypertrophic arthritis were treated by Young. A decrease in swelling, pain, and numbness and improved circulation were obtained. Restriction of motion was not as pronounced as before treatment, and the patients noted an increased ability to use the affected part.

It seems fairly well established that in cases of rheumatic and arthritic disorders there are abnormalties or deficiencies of the circulation. That the circulatory changes are particularly pronounced in the affected parts is indicated by the many reports dealing with the morbid anatomy of these disorders. The literature shows that improvement of the circulation is followed by improvement in the rheumatic and arthritic disorders. Vasodilators are used to improve the capillary circulation and, accordingly, histamine has been extensively investigated and made the subject of many reports.

When considering the use of histamine, its oral administration can at once be rejected, since it is immediately detoxified and inactivated by physiological processes. It seems preferable to apply the drug locally, i.e., at the affected site, but it must be administered in such a fashion as to avoid a generalized systemic capillary dilatation.

In producing local capillary dilatation, three types of local administration may be used: iontophoresis, subcutaneous injection, and simple massage. Injection of histamine may give rise to unpleasant systemic reactions and patients object to frequent use of the needle. Iontophoresis requires special equipment but is less liable to be attended by systemic reaction, since the dose can be well regulated. This type of administration has been attended by results that prove the unquestionable improvement that follows penetration of the affected part by histamine. Until recently the application of histamine by inunction of an ointment has not been paid much attention, probably because there has been doubt as to the penetration of the histamine through the skin into the tissues when this method is used.

*Prepared by Hoffmann-La Roche, Inc., Nutley, N. J.

The reports by Rumbaugh and Young, particularly the latter, indicate that the inunction of a suitable histamine ointment is followed by positive beneficial results, indicating that penetration does take place. The preparation which they used has been investigated. It is not believed, however, that the use of histamine, by whatever means, as a corrective of local circulatory deficiencies can be relied upon as the sole method of treatment. The various causes of rheumatic and arthritic disorders must be sought out and treated as usual, and the commonly endorsed therapeutic measures employed. The local use of histamine is only an adjuvant measure and should be so regarded.

Six cases of arthritis showing in particular pain, numbness, joint swellings, increased local temperature and deformities have been treated with Imadyl Unction, combined with a high vitamin diet in all cases and, in the first five cases, an autogenous vaccine prepared from cultures derived from infected, pulpless teeth, urine, feces and the nose and throat.

In each case the method of applying the ointment was the same: Hot applications were applied for at least thirty minutes over the area to be treated. The ointment was then thoroughly massaged into the affected part and followed by dry heat. Applications were made twice daily.

Case 1. E. G., female, aged 60. A severely painful, swollen and deformed left hand and wrist. In addition to elevation of local temperature, loss of function was marked. Symptoms were of one year's duration. Within two weeks after the beginning of treatment, the swelling subsided, the pain lessened, and the parethesia disappeared. During three months of treatment, improvement was continuous. The hand and wrist became practically normal in appearance, and the patient was able to use them in everyday activity with normal strength and dexterity.

Case 2. G. M., female, aged 43. Following the extraction of infected teeth, a marked deforming arthritis developed and had been present seven months when she was first seen. There was swelling, deformity, marked elevation of local temperature, pain and extreme limitation of motion in the hands, the wrists, the knees, the feet and the neck. In addition the patient was extremely emaciated and severely anemic. Three days after treatment was begun, the swelling of the joints of the hands diminished and passive motion could be borne. The neck could be moved after seven days, and after ten days the patient was able to help herself out of bed for the first time in six months. Improvement has continued and the patient is now comfortable, fairly active, and almost entirely free of deformities. No ill effects from the treatment have been observed.

Case 3. E. K., male, aged 63. In the three years after a stubborn and severe case of streptococcic colitis had been brought under control, there had been stiffness and limitation of function of the left elbow and the left hand and fingers. There was also paresthesia, loss of proprioceptive sense, and atrophy of the intrinsic muscles of the hand. After three months of treatment the paresthesia completely disappeared, the proprioceptive sense partially returned so that coins, keys, etc., could be detected with the fingers. Function has materially improved and there has been a reduction in the stiffness.

Case 4. F. H., female, aged 47. This patient was so severely ill when first seen that the case appeared hopeless. Following a tonsillectomy four years ago, acute generalized arthritis developed. A year later the knee was operated upon and ankylosed. At the time of the first visit there was pain, swelling, and stiffness of the right shoulder, the right wrist and hand, and the right knee. The involvement of the lumbar and sacral vertebrae was so extreme that almost complete ankylosis with a marked alteration in posture and gait had occurred. Treatment decreased pain and improved motion. Treatment is being continued and the condition is improving.

Case 5. A. M., female, aged 41. Severe lumbosacral pain radiating along the left sciatic nerve resulting in complete incapacitation. Marked improvement after only one week of treatment; at the end of one month the patient experienced no pain or stiffness unless greatly fatigued at the end of the day.

Case 6. J. A. V., female, aged 70. A history was elicited, going back many years, of a gradually progressive swelling of the left hip, knee and foot, accompanied by pain resulting in extreme difficulty in walking. The left dorsalis pedis pulse could not be felt. After one week of treatment the pain had diminished considerably, and the circulation had improved reducing the swelling of the knee and ankle so that the dorsalis pedis pulse was easily palpable. The improved circulation was also manifested by a reduction in the uric acid content of the blood.

SUMMARY

1. The relationship between rheumatic and arthritic disorders and the state of the capillary bed is discussed.

2. The place of histamine in the treatment of these conditions is described.

3. The literature is briefly reviewed.

4. Six cases treated with a histamine ointment combined with a high vitamin diet and an autogenous vaccine are described.

CONCLUSIONS

Histamine ointment of suitable composition and properly applied is a valuable adjuvant in the treatment of the arthritides. Its use is fol-

lowed by definite relief after the first few applications.

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CARDIAC REVIEW OF 1937

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In the previous cardiac reviews of 1934,[1] 1935[2] and 1936[3] no emphasis was placed on any portions of the reviews. This year it may be pointed out that in spite of the continued appearance of innumerable articles on the heart and its disturbances, the majority in 1937 were on certain subjects which have been partially or wholly overlooked previously. The electrocardiogram continues to receive entirely too much emphasis. The symptoms and signs of heart disease are beginning to be carefully analyzed again. Congenital, bacterial, rheumatic and syphilitic heart disease are being carefully studied; hypertensive and coronary arterial heart disease are receiving the most intense study which they continually require because of their high incidence. The miscellaneous causes of, or the factors associated with heart disease, such as pregnancy, trauma and nutrition, were fully emphasized in 1937. The various types of pericarditis have been considered as well as the diagnosis of dissecting aneurysm of the aorta, in the hope of establishing a better prognosis for these patients. New trends in therapy were the introduction of mercurial suppositories for cardiac edema and the intravenous administration of theophylline ethyelene diamine in Cheyne-Stokes respiration.

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1. SYMPTOMS AND SIGNS

Bourne, Scott and Witthower[4] examined 57 cases with cardiac pain and 33 cases of organic disease without pain from the physical and psychological point of view. Evidence of some psychological abnormality was shown in 19 out of the 26 cases of angina of effort, in 9 out of 9 cases of spasmodic angina of effort, in 21 out of 23 cases of angina innocens, and in 11 of 23 patients without pain. It was suggested that the severity of pain may itself be a causative factor in the production of a psychoneurotic state. Levy[5] noted that in certain persons unduly susceptible to caffeine because of increased nervous irritability or for some unknown reason, coffee may induce cardiac pain; this type of pain occurs predominantly in persons with apparently normal hearts; the discomfort caused by tobacco is more frequent in patients with diseased coronary arteries who have already experienced spontaneous attacks. Wood and Wolferth[6] use the term trepopnea for the phenomenon observed in certain cardiac patients who can lie comfortably in one recumbent, usually the right lateral, but cannot tolerate another recumbent position. They[7] believe that trepopnea is an etiological factor in the production of paroxysmal nocturnal dyspnea, and this supplies an explanation for the onset of attacks in certain cases where formerly no adequate cause was recognized. Gauss[8] detailed four cardiovascular diseases that produce pronounced gastrointestinal symptoms at times which may mimic any type of acute abdominal disease, the conditions being coronary disease, congestive heart failure, endocarditis and arteriosclerosis. Hilton[9] stated that in the majority of patients complaining of palpitation, no organic disease is discoverable; yet in a series of 564 cases of cardiac disease, palpitation was complained of in 387 (68%), of which 123

(22%) had auricular fibrillation. Loewenberg and March[10] reported the occurrence of persistent hiccoughs, appearing only after severe strain and disappearing after a period of complete rest, as the sole symptoms of thoracic aneurysm in a 54-year-old male. Messinger[11] estimated the cardiac function by simple clinical methods in 200 cardiac cases and 100 controls and offered the clinical aphorism that in an organic cardiac case manifesting tachyspnea after exercise, a relatively slow pulse rate after exercise is more indicative of a severe lesion than a fast one. Dressler[12] stated that the pulsatory movements of the thoracic wall are essentially caused by the effect of change in shape and diminution in volume of the heart. Hypertrophy and dilatation of the right chamber in association with the dilation of the left auricle, as encountered in cases of lesions of the mitral valve of a severe degree, lead to a forceful systolic propulsion of the precordial area near the sternum. Pulsatory movements of the whole chest in a frontal direction are caused by a compensatory effect of both types of pulsations; this is observed when there is marked hypertrophy of the left ventricle, tricuspid regurgitation, associated with aneurysmal dilatation of the left auricle to the right. Hunter,[13] judging from the experience of the life insurance companies, stated that a functional murmur should not be disregarded after middle life. The day has passed, he added, when a murmur, apparently organic, heard by a reliable examiner, in recent years is entirely disregarded in valuing the risk. Time and again a man dies of heart disease a year or two after the most careful examination had failed to disclose any defect, yet there was a history of such a finding at an earlier examination. Maliner and Okin[14] found the epinephrine test, subcutaneous injection of a 1:1000 solution, most useful for intensifying the murmurs of probable valvular heart disease and also in accentuating the murmurs of the definite organic valvular lesions. Steele[15] observed elevation of the rectal temperature following mechanical obstruction to the peripheral circulation and felt that this is consistent with the belief that elevation of the rectal temperature encountered in the course of heart failure may be due to slowing of the peripheral circulation.

2. Methods of Cardiovascular Examination

1. *Electrocardiography:* Katz[16] and his collaborators presented evidence that the electrocardiogram is a record of events in favored rather than in all regions of the heart, and that the precordial leads are one method of bringing out lesions in regions of the heart which are not favorably situated for notice by the ordinary distant leads. Willcox and Lovibond[17] reported that by means of the four-lead electrocardiogram they investigated 102 cases of cardiac pain but used a technic which differs from the original method; the chest leads were reversed, the left-arm electrode in the anterior position, which gave a Lead IV comparable with the standard leads. In 8 out of 62 cases of angina of effort Lead IV proved evidence of myocardial disease not given by the three-lead tracings. Master, Dack, and Jaffe[18] pointed out the fact that the occurrence of an upright or an inverted T-wave is normal, deprives the chest lead of definite value in the examination of children and care must be taken in evaluating such changes even in serial records. Sorsky and Wood[19] stated that in view of the difficulty of fixing the exploring electrode in a constant position in relation to the underlying heart, great caution must be exercised in the interpretation of serial chest lead electrocardiograms. Hall[20] pled for the adoption of Roth's method (the right arm electrode being left in situ while the left arm terminal is attached to the button electrode over the apex or, when the exact position of the apex could not be localized, over the left fourth intercostal space near the sternal border) as the standard Lead IV, because it is safer for those seriously ill and gives the familiar deviation similar to that in the three standard leads. Van Nieuwenhuizen and Hartog[21] emphasized the importance of the chest lead for the differential diagnosis of acute intrathoracic or abdominal deviations from coronary thrombosis. Sodeman[22] reported the occurrence of an upright T-wave in Lead IV in a 26-year-old female without other evidence of heart disease. Mortensen[23] described two cases of acute myocarditis following undulant fever and influenza respectively. In the first, changes in the precordial leads during the last part of the course were the only certain signs of the heart disorder. the changes continuing for a time after the extremity leads became normal; in the second

case changes in the precordial leads were an important aid in diagnosis. Whitten[24] reported that normal waves in the midaxillary leads are similar to those of the limb leads and all deviations from the normal appear to have the same significance as in the standard leads. Brody and Rossman[25] reported two additional cases of electrical alternans which consists of a regular alternation at equal intervals, in contour or amplitude, or both, of successive phases of the electrocardiogram. These findings have grave prognostic significance. McGee, Conrad and Wilson[26] reported the case of a 39-year-old coal miner with a 12-hour history but in shock, and an electrocardiogram showed inversion of the T-waves in Leads 2 and 3 with elevation of the S-T interval in those leads as well as in Lead IV. Autopsy revealed chronic "kissing" duodenal ulcers, one of which perforated, the coronary vessels were normal and the heart showed no disease. Bellet and Dyer[27] noted the electrocardiographic changes, especially inverted T-waves during and after emergence from diabetic coma; the most abnormal tracings were observed not during the coma but about 24 hours later when the patient was clinically improved and out of the acidotic state.

2. *Roentgenography:* Babey[28] stated that the esophagus may be displaced by cardiac lesions other than mitral stenosis, such as by congenital heart disease, aortic stenosis and incompetence, hypertensive heart disease, auricular fibrillation and flutter and complete heart-block. Hirsch and Schwarzschild[29] described an apparatus, the cardiocairograph, which synchronizes the roentgen exposures of the chest with the cardiac action current phenomenona. Schwedel[30] stated that the use of the barium filled esophagus serves to differentiate elongation of the transverse portion of the aortic arch from left auricular enlargement. Levitin[31] reported three cases of heart failure with interlobar effusions, the fluid disappearing with the general improvement of the patient and not requiring any specific therapy other than the treatment of the decompensation. Edeiken and Wood,[32] from an orthodiagraphic study of 291 college students who had no evidence of heart disease, felt that measurements of heart size as well as empirical determinations of cardiac shape should be interpreted with a knowledge of their limitations; in many instances the presence or absence of pathological enlargement of the heart cannot be determined on the bases of roentgen measurements alone.

3. *Other Methods:* Candel and Rabinowitz[33] found that the circulation time is of greater significance in prognosis than the venous pressure; the mortality rate increases as the velocity of the blood flow decreases, and when the circulation time is 30 seconds or more, the mortality is over 50% in one year. Berger[34] stated that a rise in venous pressure roughly parallels the development of congestive heart failure but does not antedate the appearance of clinical symptoms. Riseman and Brown[35] found a moderate elevation of the corrected sedimentation index in over 50% of the patients with angina pectoris; furthermore an elevated sedimentation rate is one of the most constant manifestations of coronary thrombosis, and this reflects the course of the disease and is an aid in following the progress of the patient.

3. Incidence of Heart Disease

Based on a study of 3,418 cases of which 60% had postmortem examinations, Willius[36] reported a relative incidence of coronary disease, 33.5%; hypertensive heart disease, 26.8%; rheumatic heart disease, 27.2%; syphilitic cardiovascular disease, 6.3%; adiposity of the heart, 2%; chronic adherent pericarditis (non-rheumatic), 1%; calcareous aortic stenosis, 1.1%; and congenital heart disease, 2.1%. Arenberg[37] presented 485 cases of heart disease among seamen with the following important etiologies: hypertension, 41.6%; rheumatic, 21.3%; atherosclerotic, 18%; and syphilitic, 11.7%. Whishaw[38] reported that the causation of symptoms referable to the heart in a study of 435 patients was hypertension, 56%; functional, 20%; coronary disease, 7.3%; thyrotoxicosis, 6.6%; rheumatic heart disease, 4%; syphilis, 1.6%; cor pulmonale, 1.3%; miscellaneous, 3.2%.

4. Etiology of Heart Disease

1. *Congenital:* Dry[39] classified congenital heart disease according to the anomalies associated with septal formation, those with torsion of the cardiac tube and with development of the bulbis cordis, those associated with development of the aortic arches, dextrocardia, and anomalies of the coronary vessels. King[40] stated that hypertension in the arms is the rule in cases of coarctation of the aorta, but the presence of

hypertension cannot be relied upon as a certain index to this condition. Wechsler and Gustafson[41] reported the case of a 30-year-old male who had two common complications of the adult type of coarctation of the aorta which are of clinical importance, namely, its association with congenital bicuspid aortic valve and the tendency for the malformed valve to become the seat of an infective endocarditis due to Streptococcus viridans. Benkwitz and Hunter[42] remarked on the ability of the circulatory system to compensate for major vessel obstructions and the toxic effects of infection as illustrated by the case of a 67-year-old male with combined infantile and adult coarctation of the aorta and coincident occlusion of the superior vena cava who died of carcinoma of the urinary bladder with retention and ascending infection. Maycock[43] reported an unusual instance of congenital narrowing and complete occlusion of the midabdominal segment of the aorta, immediately below the renal branches, in an 18-year-old female who succumbed from a perforated cecal abscess due to amebic dysentery. Gross[44] suggested that a bicuspid aortic valve in an adult should be considered as congenital only when associated with other congenital malformations of the heart. He described the pathogenesis of the lesion on a rheumatic basis and drew attention to the compatibility of the view with the predisposition of the valve with this deformity to subacute bacterial endocarditis. Robinow[45] reported a proved case of dextroposition of the heart with right ventricular hypertrophy because there was marked left axis deviation in the electrocardiogram, which illustrates again that left axis deviation is not necessarily associated with a shift of the anatomical axis to the left or with left ventricular preponderance. Snelling[46] reported the occurrence of one of the most common forms of congenital heart disease, patent ductus arteriosus, in sisters, which is a rarity. McGuire and Goldman[47] found an apparent increased velocity of blood flow in cases of congenital heart disease with septal defects having a right-to-left shunt. In 3 such cases it averaged 4.2 seconds, while in 5 patients with acyanotic congenital heart disease, most of whom were thought to have uncomplicated interventricular septal defects, the average circulation time was 12.1 seconds.

2. *Rheumatic:* Paul and Dixon,[48] from a survey among American Indian school children, showed that in the cold though relatively dry climate of Wyoming and Montana the prevalence of rheumatic heart disease is high (4.5%), in comparison with rates determined in New England (2.2%), whereas in the warm though dry climate of southern Arizona it is correspondingly low (0.5%). Rothe, Lingg, and Whittemore[49] stated that the valvular heart disease which ultimately developes in cases in which the initial affection is chorea is due not to the chorea but rather to polyarthritic and cardiac manifestations associated with its recurrences in children. Parrish, Taran and Starr[50] reported that of 28 cases of pure chorea followed clinically over a period of many years, 57% showed cardiac involvement. Cahan,[51] from the medical records of 391 Philadelphia school children with rheumatic heart disease, stated that the prognosis depends on the early discovery of the condition, the degree of cardiac enlargement, the state of the myocardium and the particular valve involved, the rhythm, the exercise tolerance, the education and preparation for a vocation with minimum additional damage to the heart. Wolffe and Digilio[52] stated that friction-like, at times somewhat musical, murmurs appear to be the earliest objective sign in low grade childhood rheumatism and are apparently due to pericarditis at the base of the heart in the region of the origin of the great vessels; it is best heard in the region of the left second and third costosternal junctions, although it may also be heard at the apex, and may be inconstant and transitory. Graef, Berger, Bunim and de la Chapelle[53] reported that among patients who died of rheumatic heart disease in congestive failure, active auricular endocarditis was observed twice as frequently in those with auricular thrombosis as in those without this, although the incidence of auricular fibrillation and the degree of mitral stenosis were about the same in both groups. Conner[54] stated that it seems very unlikely that the immunity of the valves to rheumatic damage in the adult years is to be explained on the basis of variations in their vascular supply, and one seems forced to the conclusion that the difference in their reaction to rheumatic fever in childhood and in adult life is determined probably by the difference in the behavior of the rheumatic infection itself in the two age periods. Levy and Golden[55] summarized 11 years' experience with

48 cases of rheumatic heart disease treated by roentgen irradiation of the heart and noted that in a considerable number the evidence indicated that this therapy exerted a favorable effect upon lesions in the heart and upon the course of the disease; cases with low grade activity and without signs of congestive heart failure appeared to be the most benefited.

3. *Bacterial:* Brink and Smith[56] reported a clinicopathological study of 37 cases of subacute bacterial endocarditis which was more common among males than among females; the majority of patients were in the third, fourth and fifth decades of life; and embolic processes were common. The spleen was invariably enlarged, even though not palpable; a rheumatic infection commonly preceded; the degree of previous valvular damage was usually mild; the mitral valve was more frequently involved than any other valve; and in no case was the duration of symptoms more than one year and in 80% of the cases it was six months or less. Hamman[57] stated that those who are accustomed to follow patients from the ward to the postmortem room soon become convinced that in the clinic many cases of bacterial endocarditis are not recognized, and, from the character of the lesions there observed, that many patients recover and then live on for years with the usual evidence of a valvular defect. Kilgore[58] related the failure of human immune transfusion and serum therapy in three cases of streptococcus viridans endocarditis where groups of volunteers, immunized with the patients' organisms, contributed blood by direct transfusion or (when compatible) blood serum or blood for intramuscular injection. All three were "improved" in their own and their families' opinion, but in none could be seen any beneficial effect other than temporary relief of the anemia and the psychic uplift to be expected from any strange and elaborate therapy. Blood cultures remained positive; embolic phenomena and irregular fever continued; and the patients gradually failed and died in the usual course of the disease. Williams[59] stated that in a proved case of gonococcal endocarditis, artificial therapy resulted in sterilization of the blood and as established at autopsy, sterilization and healing of the endocardial vegetations, death having been due to co-existing syphiltic cirrhosis of the liver and uremia. Smith[60] reported three cases of co-existing syphilis of the aorta and bacterial endocarditis; in the first case the vegetative endocarditis developed upon previously normal aortic valve leaflets; in the second case the syphilitic valve damage was a predisposing cause to the bacterial infection; and in the third case it was superimposed upon an aortic valve lesion which was probably the seat of old healed rheumatic disease with aortic stenosis. Sachs and Isacson[61] cited the case of a 52-year-old female, who recovered from a bilateral lobar pneumonia, later developed an ulcerative pneumococcic tricuspid valvulitis on which large soft vegetations quickly developed and in turn gave rise to septic emboli, with infarctions in the lungs. Mendel and Saibil[62] reported the occurrence of an "embolic" manifestation long before recognizable evidence of endocarditis or other of the common clinical features in a 13-year-old girl. Grossman and Lieberson[63] commented on the unusual clinical manifestations of subacute bacterial endocarditis; in one case a pericarditis was present concomitantly with it, which was clinically believed to be a manifestation of active rheumatic infection but at autopsy it was found to be an extension of infection from a mycotic aneurysm of the sinus of Valsalva to the pericardium. In the second case auricular fibrillation preceded the endocarditis and persisted throughout the course; in addition this patient had a non-palpable spleen and a polycythemia, a combination of three rare findings. In the third case, which was mistaken at first for a perinephritic abscess because of intermittent fever and hematuria, autopsy showed that he had a bacterial endocarditis and a splenic infarct which had become secondarily infected; the abscess broke through the diaphragm and caused a fatal empyema. Buddingh and Anderson[64] described the occurrence of acute vegetative endocarditis caused by Bacillus diphtheriae in a 16-year-old male with severe nosebleeds. Wells[65] related that a 50-year-old male appeared to have pneumonia and had a thoracotomy for empyema; continued illness and petechiae led to the blood culture which revealed Bacillus paratyphosus B.; death occurred 3 months after the illness started and autopsy revealed an acute vegetative mitral endocarditis and culture of the postmortem blood revealed the same organism. Fish, Hand and Keim[66] reported a case of generalized infection due to Pseudomonas aeruginosa (B. pyocyaneus), in a 71-year-old male, and associated with bacterial

endocarditis; the origin of the infection was found in the hypertrophied prostate gland, which contained suppurative foci and Gram-negative bacilli. Chester[67] reported that a 29-year-old female with positive Streptococcus viridans blood cultures and clinical signs of a bacterial endocarditis, had a continuous murmur at the pulmonic area and a globular heart, suggestive of a patent ductus Botalli; she was seen for 4 years and in good health at the end of the period, the blood cultures becoming negative. Gross and Fried[68] reported that in their material 75% of the hearts in cases of subacute bacterial endocarditis has been the seat of a previous rheumatic process, and presented evidence which supports the view that some of these cases were thrown into activity by the superimposed bacterial infection rather than that the activity of the rheumatic process predisposes to the bacterial endocarditis. Nedzel[69] stated that pressor episodes, the undue accentuation of smooth muscle contraction (a phase associated with undue general or local anoxemia), in the absence of bacteria, can produce lesions which are characteristic of those found in the human heart in endocarditis; bacterial endocarditis may represent a functional stage in which bacterial adhesion and proliferation have been added to the primary change in the endothelial status. McMillan and Wilbur[70] presented the fifth recorded case of bacterial infection superimposed on a syphilitic aortic endocarditis; this known aortic insufficiency was injecting unsterilized solutions of morphine sulphate into his own veins, which probably was the mode of infection of the superimposed staphylococcic endocarditis. Keefer[71] described and summarized a group of 15 cases of active bacterial endocarditis without bacteremia and found no essential difference in the clinical course of the patients with bacteremia and in those without bacteremia with the possible exception of the fact that the non-bacteremic cases were more apt to have renal insufficiency as the outstanding feature.

4. *Syphilitic:* Wilson[72] analyzed 211 cases of syphilitic aortitis, proven at autopsy, with regard to the presenting symptoms; in practically every case in which cardiac or respiratory symptoms were present they have been shown to be due to some factor other than uncomplicated syphilitic aortitis—either to an extension or complication of the syphilitic process or to some coexisting disease. Cole[73] reported that in his own series of patients followed from 3 to 20 years none developed aortic regurgitation or aneurysm provided they had been adequately and regularly treated during the early stage of syphilis. Kemp and Cochems[74] studied the use of the teleroentgenogram in the diagnosis of early syphilitic aortitis but concluded that there is no evidence that the diagnosis of uncomplicated syphiltic aortitis can be made by teleroentgenography alone. They[75] suggested that the physical exertion imposed by occupation influences directly the development of the graver forms of syphilitic aortitis as aneurysms occurred four times more frequently among individuals whose work demanded some degree of physical labor than among those who occupations were sedentary. Stokes and Anderson[76] stated that the distinctive features of the American alternating continuous system of treatment of early syphilis, the best prophylaxis against syphilitic aortitis, are the complete absence of rest intervals, purposeful or otherwise, at least during the arsphenamine-heavy metal phase; a duration or prolongation of treatment to a full 65 weeks, or failing that, every effort to keep the treatment continuous for at least the first 6 to 8 months; the administration of 32 adequate doses of an arsphenamine intravenously with weekly intervals between injections in courses of not less than 8 injections for the first and six for the second, third, fourth and fifth courses; the arsenicals alternating with courses of weekly intramuscular injections of not less than 0.2 gm. bismuth salicylate or its insoluble equivalent to a total of 60 intramuscular injections. Hood and Mohr[77] studied the microscopic pathologic appearance of the aorta in treated and untreated patients with syphilitic aortitis and found no difference in the findings; whatever may be the mechanism of clinical improvement in well-treated patients with cardiovascular syphilis, this improvement is not associated with any readily demonstrable anatomic evidence of healing of the lesion of the aorta which is not present in untreated cases of the same duration of infection. Cossio, Vivoli and Caul[78] reported the case of a 35-year-old male who had a typical attack of ventricular tachycardia due to infarction of the interventricular septum; the lesion was found to be of the sclero-gummous type with endocarditis, the Treponema pallidum being found in the lesion.

5. *Thyrotoxic:* Friedberg and Sohval[79] studied the occurrence and pathogenesis of cardiac hypertrophy in 27 fatal cases of Grave's disease in which the hearts were studied anatomically. Cardiac hypertrophy was found in 14 and absent in 13, and the six hearts showing the greatest degree of hypertrophy occurred in patients with well-marked right heart failure, associated with, in some cases, hypertension, severe coronary sclerosis and narrowing, or established auricular fibrillation. They concluded that cardiac hypertrophy in uncomplicated Graves' disease is quite uncommon and of slight degree.

6. *Myxedema:* Ravin[80] stated that the incidence of recognition of cardiac enlargement due to myxedema increases with the greater care in examination and more frequent use of the roentgen-ray; this enlargement, at times quite marked, usually involves both sides of the heart, but thyroid therapy decreases the size. In some cases the heart will decrease in size after thyroid therapy even though it was apparently normal in size before treatment; if the thyroid is stopped the heart enlarges and it shrinks again on resumption of thyroid. Allen[81] presented a typical case of myxedema heart in a 42-year-old female who had the cardinal features of marked increase in the diameter of the heart, feeble pulsation and electrocardiographic complexes of low voltage with flattened P and T-waves. There was a marked decrease in the size of the heart, improvement in function, and changes in the electrocardiogram following thyroid therapy.

7. *Hypertension:* Murphy, Woods and Grill[82] stated that every hypertensive must be looked upon as a candidate for ultimate failure, which as a rule occurs within 5-15 years after the onset of hypertension; during the earlier period, which may vary months to years, the main object is to safeguard the hypertrophic heart from influences which precipitate heart failure. Arkin[83] reiterated the fact that essential hypertension is one of the chief causes of cardiac failure and that 65% of hypertensives die from this cause. Gross and Spark[84] analyzed the coronary and extracoronary factors in hypertensive heart failure and stated that cardiac hypertrophy is the feature common to cases of congestive heart failure irrespective of the presence or absence of major coronary artery disease; a collateral circulation, both intracardiac and extracardiac, may play a role in preventing failure of the hypertrophied heart, but congestive heart failure is failure of the heart which fails to undergo further hypertrophy. Riesman[85] stated that moderate cardiac hypertrophy is not unfavorable, but that cerebral accidents even of apparently trivial origin as well as anginal pain and retinal hemorrhages are all ominous signs. Ashe and Mosenthal[86] stated that people with hypertension do not habitually eat more protein or more salt than normal persons; and that there is no evidence to show that a low protein diet, followed by a hypertensive subject, will materially reduce the blood pressure provided there is no anemia. Van Nieuwenhuizen and Hartog[87] were of the opinion that the principal causes of the occurrence of left axis deviation in the electrocardiogram in hypertension are a clockwise rotation of the heart in its longitudinal axis and dilatation of the left ventricle. Roth[88] presented an electrocardiographic pattern of the apical chest lead tracings in certain cases of hypertension with cardiac enlargement as the ventricular complex in this tracing is characterized by a QRS which consists predominantly of a large negative component and by an upright T-wave. The pattern is essentially a modified standard Lead 3, and is due, apparently, to the axillary situation of the exploring electrode; therefore, in cases of left heart enlargement due to hypertension the left pectoral lead is the chest lead of choice and the so-called apical lead should be avoided. Wolffe and Diglio[89] used pancreatic extract in the treatment of hypertension and obtained symptomatic relief in many patients whose blood pressure remained at constant, original, high levels. Page and Huer[90] noted that although marked anatomic change was present in the vessels of some of the patients, this did not prevent a marked fall in the arterial pressure which persisted long after the patient had recovered from the immediate effects of section of the anterior nerve roots; this demonstrated that anatomic changes in the vessels do not account for the persistence of hypertension. Baker and Brunsting[91] reported a case of dermatitis medicamentosa resulting from the administration of sulfocyanates in the treatment of hypertension; this drug continues to be used despite the known toxic manifestation although much of the early enthusiasm for its use has waned. Roth[92] stated that significant decreases in the blood pressure of patients with essential hypertension were not produced by surgical methods

except when extensive abdominal sympathetic denervation was effected; when less radical operations were performed, the magnitude of the decrease seemed roughly proportional to the extent of the denervation.

8. *Pulmonary:* Parkinson and Hoyle[93] investigated 80 patients suffering from a high grade of emphysema, chiefly in regard to the cardiovascular system, and in particular to the size and shape of the heart as judged by radiology. The cardiac factor in emphysema alone was seldom emphasized except late in the disease, and then not always, or unless there was a cardiac lesion of another sort. A complicated etiology was so common that it was demonstrable in more than 50% of the series, and this complication was predominantly hypertension; the cardiac symptoms and signs in emphysema seemed more likely to be due to hypertension than to the direct effect of emphysema on the heart. Cardiac failure from emphysema alone was surprisingly rare; and when it occurred it was with normal rhythm and edema, and as a very late event that was invariably terminal. Examples of failure apparently due to emphysema were most often explained by associated cardiovascular disease, usually hypertension, and in such, congestive failure recurred.

9. *Coronary:* Wolferth[94] stated that the course of events after coronary occlusion, particularly the occurrence of myocardial infarction, depends on such factors as the size and position of the vessel obstructed, the rapidity of development of occlusion and the integrity of the adjacent circulation. White[95] suggested that we avoid the definite diagnosis of coronary disease unless we establish, first the presence of angina pectoris without syphilitic aortitis or extensive aortic valve disease; secondly the occurrence of coronary thrombosis past or present; or thirdly, the existence of bundle branch or auriculoventricular block or of characteristic T-wave changes in the electrocardiogram. Smith[96] compared the incidence of coronary scelrosis among physicians with members of other occupations, from which he concluded that occupation does influence the incidence of coronary sclerosis since it occurs four times as often among physicians as among laborers and farmers. The Jacksons[97] feel that many attacks now diagnosed as coronary thrombosis (which may or may not be present) are really due to pulmonary embolism (or pulmonary thrombosis). Feil[98] observed 15 cases of coronary thrombosis with preliminary mild anginal attacks preceding the clinical picture of thrombosis by hours or days—usually from 12 to 48 hours; this pain was not dependent on effort or motion, was more or less continuous and of an oppressive or burning character. Sampson and Eliaser[99] presented 29 cases of acute coronary artery occlusion exhibiting attacks of precordial pain of prolonged duration, which seemed to represent a precursor phenomenon of characteristic occlusion. Master, Dack and Jaffe[100] made a statistical study of over 800 attacks of coronary thrombosis to determine what factors initiated the thrombosis; it occurred in all walks of life and in all types of occupations, although 40% of the attacks occurred during rest or sleep; this was probably a coincidence, since half the day is ordinarily spent in these states. Exertion, even severe, was of little or no significance in the precipitation of an attack, and this held good for walking, straining at stool, coitus and playing golf. Excitement, ingestion of food, infection, tobacco, alcohol, heart failure, time of day and season of the year were found to have no significance.

Durant[101] reported the occurrence of coronary thrombosis in seven young patients ranging in age from 22 to 35; all were males, none were overweight, and none engaged in a professional occupation; five of the seven survived their attacks by at least six weeks. Blaze[102] reported the youngest case of coronary thrombosis on record; a 23 year old laborer was seized with severe pain in the chest and left arm, collapsed and expired 1½ hours later; autopsy revealed a fresh thrombus in the descending branch of the left coronary artery. Smith and Hinshaw[103] reported coronary thrombosis affecting a patient 31 years of age who had a known hypertension for five years; he recovered from the infarction, but following this a very severe progressive angina pectoris developed. Glendy, Levine and White[104] studied coronary disease in 100 patients under 40 and stated that the duration of life for those who died and the life expectancy of the survivors is greater than for patients of all ages with coronary disease, but the susceptibility to sudden death is just as great. Feinstein and Lieberson[105] noted that occasionally a patient will not demonstrate a characteristic pattern of serial changes in the conventional leads and will do so in the chest

leads following coronary thrombosis. White[106] discovered a new record in longevity after coronary thrombosis in a clergyman and active preacher whose first myocardial infarction occurred at age 48, his second at 51, his third at 59 and his fourth at 63; he died of congestive heart failure at the age of 73, in his 25th year after his first coronary thrombosis, and autopsy revealed multiple areas of infarction in the left ventricle. Palmer[107] studied the prognosis following recovery from coronary thrombosis and noted that the duration of life averaged 4.2 years in 65 patients known to have died, and that hypertensives appeared to have a somewhat better outlook in this regard than non-hypertensives; cardiac enlargement was a most important factor in causing restriction of activity, the expression of its influence being dyspnea on exertion and congestive heart failure. Master, Dack and Jaffe[108] noted that congestive heart failure occurred in 66% of 140 patients with coronary thrombosis; the mortality rate was 30% in the presence of heart failure and only 4% when it was absent. Palmer[109] studied the size of the heart following coronary thrombosis and concluded that by far the most important factor causing enlargement proved to be hypertension, which was held to be the single or predominant cause in more than 80% of all cases with enlargement. King[110] stated that in cases observed some time after recovery from coronary occlusion the appearance of paroxysmal nocturnal dyspnea, acute pulmonary edema and congestive failure, especially with a slow heart rate and normal rhythm, and the presence of considerable cardiac enlargement or anginal attacks on slight exertion, indicated impending complete cardiac failure. Boyd and Werblow[111] submitted additional evidence to support the idea that major coronary thrombosis may occur without pain; sudden inexplicable increased congestive failure in a known cardiac should arouse suspicion of coronary thrombosis. Blake[112] stated that hyperglycemia and glycosuria are common to the syndrome of coronary occlusion (20%) as noted in 74 cases, but such changes are of a transitory nature usually and require no insulin. Gold, Travell and Modell[113] stated that the routine use of theophylline with ethylenediamine (aminophylline) in the treatment of coronary thrombosis received no support from their experimental work. Master, Dack and Jaffe[114] stated that the cardiac rate, whether or not the rhythm was regular, is a very significant factor in the outcome of an attack of coronary thrombosis; if the ventricular rate is above 120 or below 40 the outlook is poor. Hall[115] reported the case of a fatal air embolism which originated in the rupture of a pleural adhesion as the result of an artificial pneumothorax.

Stanley[116] reported the case of a 61-year-old female who had a coronary thrombosis and the infarct of the interventricular septum perforated; although it has been stated that rupture of the septum probably imposes no great additional burden on these hearts which usually are extensively involved by infarction, it was his impression that the patient was greatly shocked by the rupture and that her clinical course was downhill thereafter. Akerson, Dias and Monroe[117] noted that coronary occlusion in the aged often occurred without pain and was followed quickly by death. Blumer[118] emphasized the importance of embolism as a complication of cardiac infarction as such phenomena are clinically recognizable in about 14% of such patients. Dozzi[119] stated that in suspecting the possibility of coronary thrombosis as the etiologic factor in a case of hemiplegia, we must bear in mind the atypical forms of coronary thrombosis and must not lose sight of the fact that in cases with congestive heart failure the lesion might be masked by dyspnea.

10. MISCELLANEOUS

(a) Pregnancy: Engbring and Sutton[120] stated that compensated heart disease is no contraindication to marriage and child-bearing as adequate pre-natal supervision and vaginal delivery in the absence of obstetrical indications aids definitely toward a favorable outcome. Hamilton[121] discussed a series of 42 fatalities occurring among more than 750 Class I cardiacs from which he indicated that some deaths are unavoidable, especially those due to pulmonary embolism and bacterial endocarditis; this unavoidable death rate is low but many times higher than the rate for women with sound hearts. He[122] stated that labor can produce heart failure in cardiacs, but the present feeling is that cardiacs, even sick cardiacs, stand labor surprisingly well. Consoli[123] stated that the persistence of decompensation in pregnant cardiacs results in the spontaneous pro-

duction of abortion, so that the induction of abortion should be reserved only for the few cases showing very grave signs of myocardial changes. Harris[124] studied a series of 100 cases of heart disease with normal rhythm complicating pregnancy from which he stated that pregnancy is contraindicated in those cases of heart disease with normal rhythm in whom the exercise tolerance broke down early in a previous pregnancy, or where the heart is considerably enlarged. Lamb[125] feels that in addition to a history of previous decompensation or auricular fibrillation, the following indications for the interruption of pregnancy should be added: A heart size of more than 55% of the diameter of the chest, a long rumbling diastolic murmur at the apex, signs of active rheumatic infection, and rheumatic heart disease of more than 15 years' duration. Stander and Kuder[126] stated that the treatment in Class I and Class II(a) pregnant cardiac patients consists of hospitalization two weeks before term, followed by spontaneous delivery or in a small number forceps at the beginning of the second stage; the severe types, Class II(b) and Class III, must be hospitalized earlier in pregnancy in order to decide whether the pregnancy should be allowed to continue, and if so, delivery should be effected by forceps unless the patient falls in Class III, where it is advisable, after adequate hospitalization and digitalis to perform a Cesarean, followed by sterilization. Teel, Reid and Hertig[127] presented six cases in which severe non-convulsive toxemia of pregnancy was complicated by one or more sudden paroxysms of dyspnea associated with acute pulmonary edema which closely resembled classical cardiac asthma; the immediate prognosis for these patients was grave but if they survived delivery and early puerperium, the ultimate outlook seemed to be good. Felsen, Schumer and Osofsky[128] reported the case of a 25-year old female with typical streptococcus viridans aortic endocarditis complicated by pregnancy, who delivered a live uninfected fetus but died 16 days after the normal delivery. Gouley, McMillan and Bellet[129] made a clinical study of seven women having cardiac decompensation in the puerperium, four of whom died and at necropsy showed a myocardial degeneration differing from the lesions ordinarily associated with the current classifications of heart disease; death occurred in three cases following embolism, which had its origin on the endocardial surface of degenerated heart muscle, but the coronary arteries were normal, and there was no evidence of coronary occlusion in the living patients.

(b) *Trauma*: Schleiter[130] reported four cases of trauma to the chest, two with cardiac injury and recovery and two involving the aortic valve. A male laborer suffered fractures of the seventh and eighth ribs on the left side and the electrocardiogram showed a 3:1 auricular flutter. A boy, kicked in the chest by a horse, suffered shock and acute right heart failure, but no medical or surgical cardiac therapy was used, and the boy recovered. Another male had a compression of the heart in an auto accident which resulted in a linear tear of the aorta and rupture of the anterior aortic cusp; he died five months after the accident of congestive heart failure. Munck[131] stated that in 22 out of 32 persons who died up to 16 days after trauma due to powerful blunt force, mostly in automobile accidents, he found changes in the heart believed to be connected with trauma; scattered small hemorrhages in the myocardium predominated, and on microscopic examination there was also frequently subepicardial and subendocardial bleedings seen to extend into the underlying musculature. Gissane and Schulenberg[132] operated successfully on a 23-year-old male 60 minutes after he received a stab wound of the heart and 40 minutes after he received an adequate dose of morphine; at operation after a first wound on the anterior surface of the right ventricle was sutured, a second was found on the diaphragmatic surface of the same ventricle. The clinical picture of tamponade of the heart was not obvious, yet at operation 1200 cc. of blood were collected from the pericardium before suture was begun.

(c) *Nutritional*: Weiss and Wilkins[133] indicated that dysfunction of the cardiovascular system resulting from unbalanced food intake is a disease of regular occurrence and reported 120 such cases; the clinical symptoms and signs, the blood chemistry the myocardial changes and the therapeutic responses corresponding to those described in "beri-beri hearts." Taylor[134] noted that guinea-pigs suffering from scurvy show in their hearts valvulitis, myocarditis and occasionally pericarditis; the lesions resemble those seen in rheumatic carditis only in that they are both a diffuse non-purulent carditis without gross valvular vegetations. Hashimoto[135] reported a

case of the acute pernicious form of beriberi, showing electrocardiographic evidence of myocardial damage, in which recovery from cardiac failure was prompt after the intravenous administration of 3 mg. of purified vitamin B_1, Weiss and Wilkins[130] stated that of the vitamins, B_1 deficiency is the most important cause of cardiovascular disturbances; that beriberi with cardiovascular dysfunction is a disease of regular occurrence in the United States, and that cardiac disturbances in human scurvy, with the exception of hemorrhagic pericarditis, and in rickets are usually due to coexisting vitamin B_1 deficiency.

(d) Arteriovenous Aneurysm: Price[137] advised early surgical treatment for removal of the aneurysm, or its obliteration by ligature, in order to prevent cardiovascular changes. Quattlebaum[138] presented a case of arteriovenous aneurysm showing pronounced electrocardiographic changes prior to surgical cure of the aneurysm; after the operation the tracings showed a remarkably slow return to normal, though clinical improvement was rapid, but the auricular fibrillation did not cease spontaneously after operation yet disappeared with quinidine therapy and showed no inclination to return. Porter and Baker[139] studied the significance of cardiac enlargement caused by arteriovenous fistula and stated that the enlargement of the artery and vein in the fistulous circuit and the increase in cardiac size are primarily adjustment dilatation; an extreme degree of reducible cardiac dilatation, 21 cm. to 15 cm., can exist over a prolonged period (21 years) with the occurrence of only a minimum amount of cardiac hypertrophy and without development of heart failure.

(e) *Malignancies:* Schnitker and Bailey[140] diagnosed a metastatic tumor of the heart in a 64 year old male who had a bronchus carcinoma which had invaded directly the wall of the right auricle in the region of the sino-auricular node; the diagnosis was made clinically because of the development of auricular flutter. McNamara, Ducey and Baker[141] cited the case of metastases to the heart from a primary carinoma of the duodenum which weakened the myocardium and precipitated cardiac rupture in a patient with rheumatic heart disease who had been decompensated over three years. Doane and Solis-Cohen[142] reported that in a 64 year old male massive metastases to the right auricle of the heart gave rise to an interesting symptom-complex of first, a recent coronary thrombosis, followed by auricular flutter, and later an A-V block. Smith[143] diagnosed two cases of neoplastic involvement of the heart on the basis of a pericardial friction rub in one and the presence of A-V rhythm and a definite diastolic murmur which could not be easily acconted for on any other basis in the other.

(f) *Athletics:* Cooper, O'Sullivan and Hughes[144] studied the response of the healthy and diseased heart to exercise and concluded that there is no evidence of permanent change in the heart following training for sports and that extreme physical effort in the trained athlete does not result in damage to the heart. Rosnowski[145] took electrocardiograms of skiers and marchers immediately before, during, and 24 and 48 hours after the strain; various and variable signs developed in the tracings in a small group, but none were of any particular significance. Erdelyi[146] stated that there is no change in size or form of the heart that is characteristic for "athletes' heart" and that the roentgenogram alone cannot serve as the basis for the idea.

(g) Diphtheria: Begg[147] investigated a series of 100 cases of severe diphtheria and noted that most of the cardiac abnormalities developed within the first three weeks of the disease; in many cases the exact nature of the abnormality could not be recognized except by the auxiliary evidence of the electrocardiogram; a normal tracing, especially within the first few days of the disease, did not preclude the possibility of sudden circulatory collapse. Thompson, Golden and White[148] reported that among 100 persons who had severe or moderately severe diphtheria from 15 to 20 years ago, no clear instance of A-V or intraventricular block was found; they added that while there are acceptable cases of the development of disturbed conduction during the course of diphtheria and that in very rare instances the disturbance persists permanently, they have as yet no proof that it may develop some years after the illness.

(h) *Others:* Hedley,[149] in a preliminary report on an alleged extensive disability insurance fraud due to a heart disease racket, urged physicians to be on guard against "synthetic" heart disease; the possibility of surreptitious digitalization should be borne in mind, especially in inter-

preting electrocardiograms showing changes compatible with digitalis effects. Norman and Allen[150] feel that it is advisable to treat polycythemia vera if for no other reason than to prevent vascular complications as erythromelalgia, myocardial infarction, angina pectoris, etc., occurred in about 33% of their cases.

5. PATHOLOGY

Myocardial: Golden and Brams[151] stated that although only 38 reports of hearts weighing 1000 gm. or more could be found in the literature in the past century, nine such specimens were observed in patients admitted to the Cook County Hospital in the past eight years. Only one of the nine cases was associated with pericardial adhesions, while almost half of those previously reported were supposedly due to pericardial adhesions, either alone or in combination with valvular disease, usually aortic insufficiency. Weiss and Wilkins[152] described two cases of solitary myocardial abscess with perforation; in the first case the abscess ruptured into the right ventricle as well as into the pericardial sac, and in the second case the abscess was localized mainly in the fat tissue at the auricle and ventricle and ruptured into the pericardial sac; in both cases the clinical course did not suggest sepsis and the unexpected cardiac perforation resulted in a fatal circulatory collapse. Cohen and Levine[153] reported the case of a 64 year old laborer who was ill 8 months with gradual and progressive enlargement of the abdomen associated with shortness of breath; abdominal peracentesis performed frequently offered little aid; x-ray revealed calsification of the myocardium; autopsy revealed an aneurysm of the left ventricle, severe sclerosis of the coronary arteries, with evidence of bone formation in the calcified myocardium.

Endocardial and Valvular: Altschule and Blumgart[154] made the clinical diagnosis of tricuspid stenosis on the basis of marked generalized venous engorgement, cyanosis, slight jaundice, pulsation of the veins and of the enlarged liver, and the presence of typical murmurs to the right of the xiphoid; the high venous pressure was of importance in the formation of cardiac edema and of the orthopnea in these patients. Levine and White[155] reported five cases of severe disease of the mitral valve with congestive heart failure who had as a fatal complication pulmonary infarction without any clinical syndrome of sudden vascular collapse or any similar episode; it was not uncommon but was difficult to diagnose, and it renders treatment of the congestion very difficult and makes the prognosis grave. Thompson and Levine[156] stated that patients with tricuspid stenosis, in spite of the fact that death occurs as a comparatively early age, are able to tolerate their symptoms considerably longer than are those patients with chonic rheumatic valvular disease in whom the tricuspid valve is not involved. Contratto and Levine[157] indicated that the most distinctive physical findings of aortic stenosis were a loud basal systolic murmur, a systolic thrill near the aortic area, and the detection of calcification of the valve on fluoroscopic examination; once major symptoms developed in this group the duration of life was short, and the common causes of death were congestive heart failure, subacute bacterial endocarditis, and sudden death.

Pericardial: Behrend and Boles[158] presented cases which illustrate the necessity for prompt radical drainage in suppurative pericarditis, of non-surgical intervention in tuberculous pericarditis, and of earlier operation in chronic mediastinopericarditis. Bigger[159] stated that suppurative pericarditis is not rare, but is infrequently diagnosed because, in the absence of characteristic symptoms, it is not suspected and not looked for; it is never primary but always secondary to infection elsewhere except when it results from direct trauma, and the most important antecedent infections are pneumonia with empyema and osteomyelitis with associated infection of the blood stream. Shipley[160] indicated that tamponade of the heart is the most important symptom of pericarditis, yet tamponade may be caused by many extrapericardial conditions. Vander Veer and Norris[161] reported that the characteristic electrocardiographic pattern in acute pericarditis consists of an elevation of the R-T segments in the 3-limb leads, which is most striking in Lead II; microscopic study of the hearts in all cases with "positive" electrocardiograms showed definite subepicardial myocarditis. MacFarlane[162] cited the case of a 16 year old girl with acute suppurative pericarditis who three weeks previous to this had a cellulitis of both hands, and the pericarditis was treated only by paracentesis with recovery. Gouley[163] stated that compression of the pulmonary artery

by constricting pericardial adhesions is characterized by physical signs of stenosis of the pulmonary artery, pulmonary arterial hypertension and adhesive pericarditis. Lassen[164] studied the pathological findings in 57 cases of chronic fibrous adhesive pericarditis, noted among 1,601 autopsies; in 33 cases cardiac insufficiency was assigned as the cause of death, in 17 as a contributing cause, and in seven no sign of cardiac insufficiency was found. Turner and Moore[165] reported the case of a 48 year old woman with chronic adhesive pericarditis who had two cardiolysis operations 21 years apart and is alive and well 25 years after the first and nearly two years after the second operation. Schmieden and Westermann[166] reported that of 22 cases of fibrous constricting pericarditis operated on, 6 (27.3%) had perfect healing with restoration of full ability to work; 6 (27.3%) had very marked improvement and preservation of life after long observation; one died at operation of acute dilatation of the right ventricle; 7 (31.9%) died during the postoperative period; and 2 (9%) died after transitory improvement. Pilcher[167] reported the case of a girl who was operated on for constrictive pericarditis at the age of 20 after having been ill six years; she had been admitted to the hospital 30 times previous to the operation and had been tapped abdominally 42 times, yet in spite of the long period during which severe symptoms had been present, operation gave her complete relief and one year afterwards she was well. Boggild[168] indicated that the best results with surgical treatment in fibrous pericarditis are obtained in slowly developed cases using intrapericardial pericardiolysis with pericardial resection as the procedure of choice. Keefer[169] studied 20 cases of tuberculosis of the pericardium, which may occur as a terminal event during the course of another disease in patients over 40 years of age; such cases frequently present themselves with symptoms and signs of a wasting disease and obscure fever, edema and congestion simulating cardiac insufficiency, multiple serous membrane infections, or miliary tuberculosis. Harvey and Whitehill[170] stated that they had never seen a patient who recovered from an active tuberculous pericarditis developed chronic constrictive pericarditis with the syndrome of "inflow stasis," an they followed 17 cases from six months to seven years, of which nine are known to be well. Cushing[171] described a case of a pericardial diverticulum in a 43 year old male; air was injected into the subcutaneous mass and was found in the pericardial cavity; the diagnosis of calcified tuberculous pericarditis was confirmed by the demonstration of tubercle bacilli in the pericardial fluid obtained by aspirating the diverticulum. This patient[172] died of bronchopneumonia and an autopsy revealed a chronic tuberculous pericarditis with anterior extrathoracic pseudodiverticulum (communicating abscess) of the pericardium, chonic cardiac compression and extreme cardiac deformity. Martin[173] submitted three patients to section of the left phrenic nerve for adhesive pericarditis as he believed that too little weight has been given to the damaging effect on the heart of diaphragmatic adhesions. Beck[174] believes that adhesions to the heart are silent and incidental, that there may be no reason for their recognition clinically, and that there is no reason to operate for their correction; further, that adhesions to the heart do not produce dilatation of the heart, failure of the heart, or hypertrophy of the heart. Freedman[175] stated that encapsulated pericardial effusions are most commonly situation on the right side of the heart, and on x-ray examination they may be either hexagonal, semi-circular, or oval in shape with the cardiac pulsations usually absent over the area of encapsulation.

Vascular: McGeachy and Paullin[176] stated that of six patients with dissecting aneurysm of the aorta a correct antemortem diagnosis was made in three, and indicated that an existing hypertension, with perhaps a sudden sharp increase in the arterial pressure, is the provoking cause of rupture in the majority of patients. Glendy, Castleman, and White[177] stated that dissecting aneurysm of the aorta occurs predominantly in males between 40 and 60 years of age in whom there is an antecedent history of hypertension. Blackford and Smith[178] reported the occurrence of a dissecting aneurysm of the aorta in a high-strung, hypertensive fat man, aged 61; death occurred from rupture of the dissecting aneurysm into the pericardium 36 hours after the original break through the intima. Roesler, Gifford and Betts[179] described a new diagnostic sign in dissecting aneurysm of the aorta which consisted in the appearance of an area of pulsation which shifted rapidly, associated with the

rapid change in the roentgenological appearance of the aortic shadow.

6. FUNCTIONAL DISORDERS

Congestive Failure, Including the Use of Digitalis and Diuretics: Bramwell[180] stated that heart failure is a relative term, but it signifies that the supply is unequal to the demand; the latter varies greatly according to the habits and mode of the life of the patient. Palmer[181] indicated that there is an intimate relation between cardiac enlargement and congestive failure and supported the view that development of both is the same process. Smith[182] stated that left ventricular failure characterized by the occurrence of paroxysmal dyspnea is a common form of cardiac disability resulting from hypertension, arteriosclerosis of the coronary arteries, syphilitic aortitis and disease of the aortic valve; the dominant effect is on the left ventricle, and may occur before failure of the right ventricle, resulting in pulmonary congestion with perhaps little or no engorgement of the peripheral veins. Stroud and Vander Veer[183] found no evidence that the glucoside preparations of digitalis, when given by mouth, were quicker in action, more efficient, more prolonged in action or less toxic than standardized whole digitalis leaves. Schnitker and Levine[184] stated that a patient with cardiac disease who is digitalized, and who still shows peripheral edema or free fluid in the body cavities occasionally has symptoms of headache, nausea, vomiting, giddiness and lassitude after diuresis induced with salyrgan or mercurin or theophylline; these symptoms could be due to digitalis intoxication when the body fluids are excreted, if that body fluid contained digitalis substances. Thomson[185] reported that mercurial suppositories (novurit) were successfully employed on 208 occasions with an average diuresis per suppository of 2,360 cc.; the administration of digitalis had no appreciable effect upon the diuretic response to the mercurial suppositories. Herrman and Decherd[186] stated that the mercury suppository constitutes an innovation that has many advantages, and even though the results are not as spectacular as those following intravenous types, yet, even if half as active it would still have a place for itself by virtue of the ease of administration. Stewart and Wheeler[187] indicated that mercupurin appears to be an excellent diuretic drug which is at least equal and possibly superior to salyrgan as it has the definite advantage that thrombosis or slough do not occur at the site of injection. Poll and Stern[188] stated that when a waterlogged patient under the influence of diuretics begins to fail, one or more of the following conditions may be present: irremediable myocardial insufficiency, a fresh coronary thrombosis, exacerbation of an acute rheumatic carditis, pulmonary infarction, respiratory tract infection, a cerebral vascular accident, true renal insufficiency, oversedation, acidotic coma from the use of acidifying salts in cases with impaired renal function, or the syndrome of restlessness and mental confusion associated with rapid dehydration therapy. Chamberlain and Levy[189] found a preparation of squill (urginin), an effective cardiac remedy, but it offered no advantages over digitalis with respect to its action in myocardial insufficiency. Marais and McMichael[190] used theophylline-ethylenediamine effectively in abolishing Cheyne-Stokes breathing; ½ cc. of a 2 cc. ampule was injected as the respiratory movements began to decline in amplitude, then waiting for the next period of hyperpnoea to decline, the second ½ cc. was given and continued in the same manner until the whole ampule contents had been injected intravenously. Griffith[191] suggested that the rules worth following in the use of diet in the treatment of heart disease should be the maintenance of a normal weight and tissue nutrition, a limited amount of protein, and a liberal amount of carbohydrate.

Angina Pectoris: Riseman and Brown[192] noted certain characteristics of importance in the diagnosis of 100 proved cases of angina pectoris; the attacks were sudden in onset, short in duration, involved the anterior chest (including the epigastrium) and inner aspect of the arms, were induced by exertion in the cold, and consisted of a vague sensation of unrest or distress difficult to describe. Fisher[193] stated that there is no such disease entity as angina pectoris and that the term should be scrapped; all pain in heart disease should be known simply as cardiac pain which may or may not be associated with angina, a sense of constriction, just as angina may or may not be associated with pain. Bourne[194] used three criteria for the diagnosis of angina innocens; the pain is not proportional to exercise, there is no evidence of cardiovascular disease, and that the course of the disease in patients observed carefully proves its innocent

nature. Gold, Kwit and Otto[195] studied the xanthines (theobromine and aminophylline) in the treatment of cardiac pain and their results showed that patients are unable to distinguish the effects of a placebo from those of a xanthine when measures are taken to preclude identification of the agent by any means other than the relief of pain. Riseman and Brown[196] used 15 different drugs in the treatment of 26 patients with angina pectoris and found the patient's estimation of therapeutic benefit indicated that all drugs were approximately equal in value; placebos were just as often beneficial as other medicaments and the response of the patient to medication gave no indication as to the prognosis. Brown and Riseman[197] studied the comparative value of 11 purine derivatives in the treatment of 16 patients with angina pectoris and concluded that theobromine with sodium acetate is by far the least expensive of the effective purine preparations, if one is used. Scott[198] reported two cases of acute spontaneous pneumomediastinum after severe exertion in young boys in whom the chest pain and its radiation into the arms was typical of angina pectoris. Riseman and Brown[199] noted that the majority of attacks of angina pectoris were less than three minutes in duration but practically all the patients believed that the attacks were longer; since the attacks were of such short duration the cessation of pain frequently coincided with the solution of the nitroglycerin tablet. Boas and Levy[200] stated that an affection of the shoulder characterized by pain, muscle spasm and limitation of motion occurs commonly in patients with angina pectoris, but the site and radiation of the pain may be determined by extracardiac lesions, such as abscesses of the teeth and spondylitis. Foti[201] made a study of 20 patients who developed angina after the age of 70 and noted that individual attacks were often comparatively mild but occurred frequently, and were related to walking more than any other single factor.

Paroxysmal Tachycardia, etc.: Campbell[202] stated that paroxysmal tachycardia (of any variety) in infants is more likely to be associated with a diseased than with a healthy heart. Weiss and Sprague[203] used ipecac in the treatment of paroxysmal auricular tachycardia; in 11 cases attacks were relieved following the oral administration of doses from 4 to 32 cc. of the syrup of ipecac. Maddox[204] reported the occurrence of paroxysmal tachycardia in an adult female which lasted 69 days; the seizure was sudden in onset but gradual in decline and the electrocardiogram was typical of paroxysmal auricular tachycardia. Taran and Jennings[205] cited an unusual case of paroxysmal nodal tachycardia in a seven day old infant on whom vagal stimulation or the administration had no effect but digitalis relieved the paroxysm. Schott[206] observed five cases of dissociation with interference of the heart, a condition in which a faster A-V rhythm and a slower S-A rhythm co-exist and in which the slower S-A rhythm at times interferes by conducted beats with the faster A-V rhythm, but this can only be recognized by electrocardiographic methods.

Auricular Fibrillation and Flutter: Brill[207] reported a case of a 43 year old female with evidence to prove that auricular fibrillation in an otherwise normal heart may of itself cause congestive heart failure; he concluded that it is important to establish in patients with fibrillation the presence or absence of organic heart disease, and of bearing in mind that congestive failure of even a severe degree may develop in either instance and must not be regarded of itself as necessarily indicative of organic or structural change. Flaxman[208] found auricular fibrillation to be the most common form of arrythmia in hypertensive heart disease as it occurred in 158 (25.3%) of 623 patients with this disease; it definitely influenced the course of the disease in 44 (27.8%) in whom the rapid irregularity preceded and precipitated the congestive heart failure and led to an early death from this cause within one month after the onset in 8 (18.1%) of the 44 patients; when the auricular fibrillation occurred after congestive heart failure had been present from one month to several years, it had no apparent influence on the course of the disease except in relation to the cause of death and the comparative absence of additional occurrences common to appear in hypertensive patients. Sprague[209] reported the case of a 36 year old male who had repeated attacks of palpitation lasting from one to five minutes with sweating; the heart size was normal but rapid auricular fibrillation was present and electrocardiography showed also a bundle-branch block; the patient was given 1½ grains of digitalis over four days and his heart became regular, and

afterwards no cardiac pathology could be demonstrated by physical examination, roentgen study, or laboratory tests. Lewis[210] reported the case of a clergyman who was first seen at the age of 53 years with a tachycardia of three years duration, and which the author reported as a case of auricular flutter in 1912, (Heart, 4:179, Case 3); the auricles seemed to have fluttered without cessation for 24 (if not 27) years, and although the ventricles during the greater part of this time had been driven at very excessive rates, the efficiency of the heart had not been impaired by the increased energy expenditure. Formijne and Zuidema[211] observed nine cases of pulmonary carcinoma, all of whom had arrythmias of the paroxysmal type; four had fibrillation, one had flutter, and in the rest the exact type could not be determined; they concluded that the paroxysmal development of fibrillation and flutter may be regarded as characteristic of pulmonary tumors as in most cases the necropsy revealed that the pulmonary neoplasm had invaded the pericardium or the musculature of the auricles.

Cardiac Neuroses: Wittkower[212] analyzed the psychological factor in cardiac pain in 73 such patients and irrespective of the underlying cardiac disorder, 48 of these were found to be psychoneurotics; further psychological exploration revealed that in the majority of patients, cardiac pain seemed to be a manifestation of conversion hysteria. White and Glendy[213] presented striking examples of cardiac neurosis, the first patient of which has as a basis a hypersensitive nervous system, a history of heart disease in the family, access to medical literature, increased nervous tension in his work, and a hasty incorrect diagnosis of angina pectoris; the second patient was a young woman whose first heart attack, apparently consisting of paroxysmal tachycardia with precordial distress, followed the death of her only child, and was unfortunately treated with morphine so that during the next 15 years she became a morphine addict and never showed any evidence of heart disease. Wortis[214] found that cardiac psychosis is mainly characterized by confusion, anxiety and delusions of persecution, and the patients become overtalkative and circumstantial; the development of psychosis in the course of heart failure, as compared with the neuroses, appears to be of grave prognostic significance, for of 19 patients who could be traced, 16 had died during or within two years after the period of observation. Whishaw[215] stated that 10% of all patients exhibiting cardiac symptoms or signs in private practice had anxiety as the exciting factor, as 16 females and 14 males of average age 35 years had domestic troubles, surgical operations or illnesses, or accidents, which brought on the neuroses.

Heart-Block: Borg and Johnson[216] reported a case of recurrent ventricular standstill in a 26 year old male with complete heart-block, in whom the mechanism of the attacks resembled that of transient ventricular fibrillation; the clinical manifestations consisted only of cardiac syncope but the electrocardiograph made possible the correct diagnosis. Eidlow[217] noted transient bundle-branch block of the common type which occurred several times subsequent to coronary thrombosis in a 59 year old male before this disturbance in conduction became permanently established; these changes in the type of intraventricular conduction were not accompanied by any subjective symptoms. Comeau[218] reported the case of a 78 year old female with Adams-Stokes' syndrome who, by electrocardiographic evidence, had a complete heart-block alternating with normal rhythm and conduction; she ultimately developed a chronic complete heart-block with the spontaneous disappearance of syncopal attacks. Olav-Kerr[219] stated that conorary thrombosis has to be included among the causes of chronic heart-block seen either on account of bradycardia or clinical symptoms with or without Adams-Stokes attacks.

7. SPECIAL TREATMENT

O'Shaughnessy[220] re-opened the subject of surgical treatment of cardiac ischemia by cardiac-omentopexy and established that the operation can be performed without immediate disturbance even in a type of patient ill-suited to most surgical procedures; there has been no postoperative shock and the only immediate death was due to a cause unrelated to the cardiovascular system; the graft fulfills the immediate function of supplementing the blood supply to that portion of the myocardium still capable of activity. In answer to this type of surgical treatment for cardiac ischemia Cassidy[221] stated that before the flood descends upon us (omentopexy operations for angina pectoris) and perhaps carries away hastily improvised barriers of clinical ex-

perience and judgment, elementary observations and considerations for these patients should not be forgotten in these days of elaborate investigations and treatment. Beck[222] reported that he carried out the operation of grafting a new blood supply to the heart on 16 patients with coronary disease and to October, 1936, the mortality was 50%; by December 30, 1936, twenty such patients were operated upon and the last five, all extremely bad risks, went through the operation without a death. Feil and Beck[223] reported that in the last 13 patients operated upon the mortality was 15.4%, and the last nine consecutive patients went through the operation without a mortality.

Claiborne and Hurxthal[224] stated that in following the patients with angina pectoris after a total thyroidectomy, it has been obvious that the amelioration of pain is more or less a temporary affair. Froment and Jeune[225] stated that total thyroidectomy, by lowering the metabolism, by diminishing the organic needs, and the cardiac output, may improve the painful crises but by inducing increased cholesterolemia, favors the process of coronary disintegration. Weinstein and Hoff[226] found that the immediate relief of pain in patients with angina pectoris and congestive failure observed after total thyroidectomy was due to injury to the superior and middle cardiac nerves and nerve plexuses on the posterior surface of the thyroid gland and its vessels.

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THE SYMPTOMS, DIAGNOSIS AND TREATMENT OF UNDULANT FEVER

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It was in 1861 that Marston,[1] a medical officer in the British Army, described "Mediterranean or Gastric Remittent Fever." "By this is meant a fever characterized by the following symptoms and course: a preliminary stage of subacute dyspepsia, anorexia, nausea, headache, feeling of weakness, lassitude and inaptitude for exertion, mental or physical, chills, muscular pains; lastly, a fever having a very long course —three to five or ten weeks—marked by irregular exacerbations and remissions, great derangement of the assimilative organs, tenderness in the epigastric region, splenic enlargement, slight jaundice without any exanthem. Neither bron-

chitis nor diarrhea as a rule. The patient is prone to relapses and the disorder is followed by a protracted convalescence and a chloroanemic aspect. . . There is no fever so irregular as this in its course and symptoms."

This old description is an excellent summary of the disease as we see it today. There is usually a mild indisposition with anorexia and headache; sweating is often marked. The general condition of the patient remains good in spite of the high temperature and the profuse sweats. The pulse rate is slow in proportion to the rise of temperature. In some cases the patients continue at work, being annoyed only by a sense of fatigue at the time of day when the fever is highest. The characteristic feature of the clinical course is that which gives the name, Undulant Fever, to the disease—the long duration of the disease with alternating exacerbations of fever, often high, and periods of remission during which no fever is present or only a slight rise occurs occasionally. These periods of fever alternating with afebrile or subfebrile periods may persist for months, even a year or more.

To these symptoms may be added anemia, loss of weight, strength and morale which are especially associated with the type of the disease characterized by severe acute arthritis. Enlargement of the spleen is almost always present; its absence raises a question as to the accuracy of the diagnosis. The leucocyte count is characteristically low, with a relative lymphocytosis. Loeffler[2] reported that in the course of the disease in 24 cases the leucocyte count was over 10,000 only five times; in 15 cases the count was under 4,000. There was one count of 1.400. A diminution of the total number of leucocytes quite regularly corresponded to a rise of temperature. Lymphatic glands are frequently enlarged. The liver may be enlarged, sometimes tender. There may be transitory erythematous or roseolar eruptions, even varicella-like eruptions and bullous dermatitis. The outstanding features are the characteristic fever curve, with remissions and marked exacerbations, the sweats, enlargement of the spleen and lymphatic glands, leucopenia with relative lymphocytosis, a pulse rate slow in relation to the height of fever, and the generally well-maintained physical condition in spite of these symptoms.

Furthermore (and this is an important feature) undulant fever often produces various local types of disease. Chronic arthritis of a single joint or of several joints may occur; spondylitis has been reported frequently, hydrops of a single joint is an occasional finding. Chronic subcutaneous abscesses, cholecystitis, encephalitis, meningomyelitis, neuritis, adenitis, mastitis, thrombophlebitis, pleurisy with effusion and endocarditis have all been reported. Orchitis and epididymitis occur, not so often as an isolated or presenting symptom, but as a part of the general infection. Kulowski[3] reports five cases of osseous and joint lesions, one having been observed for nearly six years before the causative organism was suspected and recovered from the lesion. Froik[4] reported 15 patients suspected of pulmonary tuberculosis who were found to have undulant fever. Cases of meningitis have been reported. DeJong[5] has reviewed this subject, adding a case of his own in which the organism was cultured from the spinal fluid. Various authors, especially in Europe, report a hepatolienal syndrome, a splenic anemia with enlargement of the liver, which they attribute to undulant fever. R. M. Johnson[6] reported "three cases of undulant fever, each regarded as pneumonia when first seen." There was "a period of several weeks of mild illness before the onset of pneumonic symptoms. . . The pulmonary lesions in each were atypical."

Primarily, the diagnosis is based upon the clinical findings. Often the symptoms are first attributed to typhoid, tuberculosis or sepsis of undetermined origin. Too often our failure to make the diagnosis of undulant fever is due to our disregard of its possible presence. Subsidence of the symptoms without demonstration of their cause leaves the question unanswered until a recrudescence suggests the possibility of undulant fever. The place of residence of the patient may suggest the correct line of approach to the diagnosis; this is especially true if it is known that raw milk has been used or that the patient has been in contact with animals or meat products which may carry infection.

A few years ago we cared for a patient whose initial symptoms were such as have just been described. Typhoid could not be demonstrated, but the information that he was fond of cottage cheese and that he had recently spent some weeks in a locality known, at that time, as a focus of undulant fever, led to the demonstration of adequate proof within a short time.

The important laboratory procedures employed

for diagnosis include, in addition to the white cell counts, the culture of the organism from the blood, urine, spinal fluid, dermal eruptions or the pus of localized abscesses, the demonstration of agglutinins for the infecting organism in the blood of the patient, the demonstration of an allergic reaction, the skin test, and the opsonocytophagic test.

"Recognition of the causative organisms by means of blood culture is of great aid to the public health officer, but even in the most favorable cases this requires from eight to ten days, at times even longer. Nevertheless, it should be employed as a routine measure at the onset of the disease. Blood culture is positive in about ten per cent. of the cases actually regarded as undulant fever."[7] This procedure is difficult, slow in development and technically exacting because of the need for carbon-dioxide, especially in demonstrating the Bang or abortus strain of the organism. Huddleson, Johnson and Bates[8] report successful cultures from 16 of 85 patients. Poppe[9] states that "The bacteriological proof of the Brucella organism through culture or guinea pig inoculation establishes the diagnosis. The cultivation of the Brucella organism from the blood, urine and exudates offers some difficulty and is only successful in a minority of the cases, and by the use of special cultural procedures."

There is an extensive literature concerning the agglutination and the inoculation tests. Huddleson, Johnson and Bates[10] state that "the presence of specific agglutinins in the blood may furnish confirmatory evidence, but cannot be relied upon, since the blood of many individuals shows Brucella agglutinins, sometimes in high titer, and a negative test does not always exclude this infection." Wichels and Gara[11] are of the opinion that "The positive agglutination test only says that man or animal has once been in contact with bacilli; whether they suffer from a Bang infection or have gone through a course of the disease recently or at some time previously is not determined by this method." According to Carpenter and Boak,[12] "Another difficulty is the validity of a diagnosis which rests only upon the presence of a febrile syndrome and Brucella agglutinins. Such evidence does not constitute a reliable diagnosis because the agglutinins may have been the result of a previous sub-clinical infection. In fact, this is not uncommon, especially in rural districts." Lotze and Wichels[13] report that among 1,000 persons, 18 per cent. showed a positive agglutination of 1:100. Hum and Nolle[14] studied the blood from 1,000 persons admitted as patients or blood donors without selection; 89, or 8.9 per cent. gave a significant positive agglutinin test.

According to Straube,[15] "A single antigen inoculation undertaken for diagnostic purposes can produce a skin allergy and can provoke agglutination and complement fixation in persons otherwise serologically negative and, indeed, in values which are so high as to be regarded as decisive in the diagnosis of Bang's disease." Binder and Fauszt[16] report seven positive agglutinations (1:100 and higher dilutions) among 22 men who had worked for longer or shorter periods with infected animals. None of this group gave a history of the clinical course of undulant fever.

The intracutaneous test is probably the test most frequently used at the present. Lerche and Roth[17] "found among 44 people, veterinarians and laboratory workers, who might have had contact with Bang's bacillus, but were apparently healthy, 41 positive skin reactions; eight of these reactions were mild. The entire group had been negative to the agglutination test. Four of the patients gave a history suggestive of Bang's disease. A control group with no demonstrable contact with abortus showed negative reactions in all. The intracutaneous test is of no value in persons who have often had opportunity for skin contact with Bang bacteria." The authors further conclude that the intracutaneous test in Bang's disease is more sensitive than the serologic reaction and that even the most marked positive cutaneous reaction cannot be accepted alone for the diagnosis of Bang's disease, at least in persons who have frequently been exposed to infection. The skin test is not an indifferent procedure: we have seen reactions of severity which occasioned the patient much discomfort, associated with fever, and sluggish healing. The test may be accepted as of value in those cases in which the agglutination reaction is doubtfully positive. . . Angle[18] recommends the injection of from 0.02 to 0.04 c.c. of Brucella antigen intradermally, and adds that "Any vaccine on the market is a suitable antigen for the performance of this allergic reaction." Hantschmann[19] describes the reaction thus: "It begins with a wheal, marked swelling about this, later moderate nodular development, and finally central necrosis." It has been observed that ab-

scess formation may follow vaccination. A case of this type was described by Scoville,[20] who reported such a reaction in a patient with mild ambulatory Brucella infection. In an endeavor to avoid severe phenomena, bacterial filtrates have been employed for the skin test, but the results are not satisfactory. In particularly sensitive people a systemic reaction may occur following the injection of the skin test antigen. . . "This may be a cutaneous hypersensitiveness without symptoms of illness as the result of previous subclinical (asymptomatic) Brucella infection." In our own experience some marked reactions have been seen; the skin test should not be undertaken lightly; minimal doses only should be used for diagnosis. It may be added that this test is the least helpful, from the standpoint of practical value in diagnosis.

Huddleson and Johnson[21] state that "Recovered cases will show a positive skin test and the cells in the whole blood have marked phagocytic power for Brucella. The infected individual will also show a positive skin reaction, but the cells in the whole blood show no (or low) phagocytic power. The susceptible individual shows a negative skin reaction and the cells show little or no phagocytic power."

This statement refers to the fourth method of diagnosis—the opsonocytophagic test of Huddleson, based upon the Leishmann-Veitch procedure developed some thirty years ago. For the detailed method, Huddleson's work should be consulted. Theoretically, the test is acceptable; practically, its value depends largely upon the skill and patience of the technician. The most recent report from Huddleson[22] and his associates includes a description of an intradermal test with Brucellergin. This is "a suspensoid of nucleoprotein (1-2000) isolated from Brucella cells. The test is performed by injecting 0.1 c.c. of the Brucellergin intradermally on the forearm and is read after 48 hours." He states that "The Brucellergin test is the most sensitive test in the diagnosis of brucellosis. If the test is negative, brucellosis will usually be ruled out. If the test is positive, the opsonic test should then be performed to determine whether infection or immunity is present."

It is obvious that the laboratory diagnosis of undulant fever rests upon uncertain criteria, "shifting sands," which afford presumptive evidence, the value of which depends upon the associated clinical findings and the diagnostic acumen of the physician. Much progress has been made in recent years, but the diagnosis of undulant fever is still puzzling; the various laboratory procedures may lead one on a false scent. In making a diagnosis of undulant fever, consideration should be given to such items of information as the residence and occupation of the patient, the source and the degree of protection of his milk supply, possible exposure to infected meat, through handling or insufficient cooking, the clinical course of the illness, and the demonstration of one or more of the special tests described. Furthermore, care must be taken to exclude those diseases which demand differential diagnosis.

Alice Evans[23] refers to Shaw's work of 1906, whom she designates as "the first to recognize the so-called ambulant form of the disease, in which symptoms may be entirely absent or limited to a few days of slight fever." Shaw found a positive agglutination test in 15 per cent. of 525 Maltese dockyard employees. "Cultures were obtained from ten, all of whom were working full time. Examination revealed, however, there was a slight rise of temperature in some of them." She refers to the paper of Hardy, Jordan and Borts, who "reported that an average of 25 per cent. of the cases they studied in Iowa were ambulant," and lays emphasis upon the fact that "The text-book definition of neurasthenia describes chronic brucellosis, exhaustion, insomnia, irritability and complaints of aches and pains for which no objective signs can be found," and insists that the possibility of chronic brucellosis should be considered in the study of patients supposed to have neurasthenia.

Campbell and Greenfield[24] in South Africa report a study of 661 patients with pyrexia of uncertain origin; 4.84 per cent. gave positive serum reactions to Brucella up to a titer of 1:400, and 9.3 per cent. to 1:100. The authors believe that the first group was made up of "certain" cases of Brucellosis and the second of "almost certain" cases.

The prognosis is good so far as ultimate recovery is concerned. The death rate is usually estimated at about two per cent. The prognosis as to duration cannot be definitely stated.

Wendt[25] regarded vaccination as the most promising method of treatment and gave increasing doses of killed bacteria every two days, slowly increasing the dose from 10 to 100 million. Yet he concludes that chemotherapy, vac-

cination and the use of serum showed no uniform results and the therapeutic effect of all the medicaments used are yet much in dispute. Kretzler[26] reported a case of prompt recovery after the administration of convalescent serum. Quevli and Nelsen[27] described favorable results following the use of whole unaltered blood transfusions in the treatment of undulant fever. In this work only such blood was used as showed a high opsonocytophagic index. So far as was known, the donors had never had undulant fever. Stage[28] found better results with typhoid vaccine than with Malta fever serum in 35 cases of undulant fever. O'Neill[29] treated five cases with detoxified Alcaligenus abortus vaccine; in every instance clinical improvement exactly paralleled desensitization to the bacterial protein. No remissions occurred within a maximum of two years after the infection.

Vreeland[30] is of the opinion that "vaccines and serums have had little success in the treatment of the disease. Mercurochrome is dangerous and neosalvarsan of doubtful value. Neither of these chemicals has been demonstrated as useful; there is no indication for their use upon the basis of our present knowledge." Poston and Smith[31] state that "Brucella meningitis can be treated by human immune serum obtained from persons who have been actively immunized to Brucella, or possibly from convalescent patients." C. E. Erwin[32] reports a case of meningoencephalitis treated successfully by the intravenous use of typhoid vaccine. DeJong[33] reviewed, in connection with his own case already mentioned, eight cases of Brucella meningitis; six recovered, three after the use of vaccines and one after the use of toxic filtrate, and two without specific treatment; one patient died and another developed a permanent transverse myelitis. In the author's own case, "Some improvement followed the use of palliative measures and antiserum."

Ervin, Hunt and Miles[34] report satisfactory results in 10 cases of undulant fever treated by the intravenous administration of typhoid vaccine. Angle[35] used a vaccine of equal parts of the abortus and porcine strains and believes that "vaccine therapy offers the best available method of treatment of both acute and chronic brucellosis." He prefers the intramuscular route of injection and thinks that not more than seven injections should be given; the injection is given every second or third day. He reports one successful intravenous injection which was associated with so severe a reaction that he has never used intravenous injection since.

Huddleson and Johnson[36] have used a liver broth filtrate of the Brucella organism for intramuscular injection. This preparation is known as Brucellin; 0.05 to 0.1 c.c. of Brucellin should first be used to determine the sensitiveness of the patient to this material. If no marked systemic reaction is elicited within 48 hours after the intradermal injection, one may give 1 c.c. intramuscularly. This dose should be repeated at intervals of three days until four injections are given. These intramuscular injections usually cause a local reaction and a rise of temperature from 104° to 105°. The symptoms are likely to increase for 24 hours. If the systemic reaction from the intradermal injection is quite severe, it is advisable to start the intramuscular injections with 0.1 to 0.2 c.c. If this dose is not followed by a severe systemic reaction, the next dose at the end of three days may be doubled. Each dose thereafter may be doubled, provided the systemic reaction is not severe, until 1 c.c. is reached. Three successive 1 c.c. injections may be given. "If the recommended number of doses of 'Brucellin' can be given, complete recovery can, as a rule, be obtained within twelve to fifteen days in those cases in which the symptoms are of only one day duration or up to three months' duration." The authors believe that "Brucellin" may be used without dangerous consequences if the precaution is taken to determine the sensitiveness of the patient before administering it intramuscularly. "'Brucellin' should *never* be injected into an individual who has recovered from the disease because of the severity of the systemic reaction which follows."

In a recent communication Huddleson, Johnson and Bates[37] report the results of the treatment of 100 cases. "If one excludes the six cases that failed to respond to treatment and the two that succumbed, it will be found that the average duration of illness per case before treatment was 159.3 days. The average duration of illness per case after treatment was begun was 18.3 days."

Foshay[38] and his associates used detoxified bacterial antigens in the preparation of an antiserum for the treatment of brucellosis. "The antiserums for these initial therapeutic trials were produced from goats after subcutaneous inoculations with chemically treated suspensions of

Brucellae." They reported 20 cases in 1935 in whom the fever disappeared upon an average of nine days following the treatment. These patients were asymptomatic in from seven days to six weeks, able to resume customary occupations in from eight days to two months, and have remained well for observation periods of from four to twenty-nine months. The total dosage of the serum varied from 20 to 65 c.c. given in divided doses over a period of three days. The initial dose was 15 or 20 c.c. The serum has been given most often intravenously, but also intramuscularly and subcutaneously. Bannick and Magath[39] report two cases in which recovery followed the use of Foshay's antibrucellosis serum. Bannick described a case which had been relieved by the goat serum and Magath related a dramatic recovery by the use of Foshay's horse serum. Foshay's recent work has been based upon the use of horse serum; the results are encouraging.

Prickman and Popp[40] reported three cases treated by hyperpyrexia with prompt disappearance of the symptoms; three of these were known to have been ill for three months or more.

Wainwright[41] reported seven cases treated with neoarsphenamin. "Six showed prompt subsidence of the infection, whereas one in which the diagnosis was not certain was little affected."

The discussion of the therapy of Brucellosis may be concluded with the conservative expression of Poppe.[41] "A decision as to the value of any method of treatment in Brucellosis is not easy because the periods of fever occur irregularly and febrile periods alternate with long afebrile pauses. It is further to be considered that the symptoms may disappear without special treatment. It must further remain in doubt as to whether or not the manifest form will pass into a latent asymptomatic one."

SUMMARY

1. The clinical aspects of undulant fever are sufficiently characteristic to suggest the diagnosis if the possibility of this disease is kept in mind.

2. Careful observation and evaluation of the course of the disease, with especial attention to the long-established presenting features of the disease, the fever, the leucopenia with lymphocytosis, the enlarged spleen and lymph glands, the sweats, the disproportionate well-being of the patient and relapses are most important in the diagnosis; a history of possible exposure is an aid to diagnosis; the various laboratory procedures, of which the demonstration of a positive culture from the blood is most signifiant, are of value. The laboratory procedures, however, are not infallible, and unless based upon satisfactory clinical evidence may mislead, with the exception of a positive blood culture, which may be accepted as diagnostic.

3. The disease may manifest itself in unusual forms; predominant symptoms of such diseases as meningitis, encephalitis, pneumonia or hepatitis may mislead.

4. Localized infections in joints or bones, superficial or deep abscesses, empyema or localized intra-abdominal infections must be kept in mind.

5. Treatment is still a subject of study; at present no specific remedy or scheme of treatment has been established.

30 N. Michigan Ave.

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CURE FOR INFANT DISEASE FOUND

Bloomington, (Ind.) Feb. 19.—(AP)—In seaweed and the peels of lemon, orange, and grapefruit, the University of Indiana School of Medicine has discovered a new remedy for cholera infantum.

The medicine is a mixture of agar-agar and pectin. The agar comes from Japanese seaweed; pectin from the peels.

The two promise the virtual finish of cholera infantum, once dread infant killer, curbed in recent years by better diets, but still taking lives in July, August, and September under the newer name, "diarrhea of infants."—Los Angeles *Times*, February 20, 1938.

IMPORTANCE OF THE ELECTROCARDIOGRAM

EMMET KEATING, M. D.

CHICAGO

All physicians, general practitioners and specialists are interested in knowing the condition of their patients' hearts. They understand that to obtain that knowledge the patient must have the benefit of both physical and laboratory examinations. In addition to the chemical, microscopical, and, when indicated, bacteriological tests, an electrocardiogram and an x-ray film are indispensable if there is real or supposed heart pathology.

Experience has proved that neither general practitioners nor specialists are interested in the theory of the electrocardiogram. There is no compelling reason for them to be interested in a purely laboratory procedure performed to confirm or to establish certain important facts. The physiologist has a compelling reason to be interested in the theory of the electrocardiogram; it is part of his job. The interest of the practitioner and the specialist is limited to knowing whether the information published by the physiologist is a fact or an opinion.

Einthoven, the great Dutch physiologist, demonstrated the possibility of recording on a moving picture film the electric currents developed by the beating heart of the living, conscious human being. That feat accomplished, he proved that the state of the fibres and the force of the contracting tissues were synchronous and synonymous with the inscriptions of the electrocardiogram.

At the request of Einthoven, Sir Thomas Lewis verified and extended Einthoven's experiments on dogs and made a large number of tracings of supposedly normal individuals and of those suffering from heart disease. Some of the tracings made of dogs were later found not to be true when compared with those of man. Since Lewis wrote his classical book, "The Mechanism and Graphic Registration of the Heart Beat," many clinicians have made numberless tracings, confirmed the studies of Lewis, compared them with x-ray and autopsy findings, and established the authenticity of the electrocardiogram.

In an appraisal of the condition of the heart,

Read at a meeting of the Northwest Branch of the Chicago Medical Society, February 18, 1938.

the electrocardiogram presents accurate visual evidence of both normal and abnormal states of the myocardium. The electrocardiogram notes changes acute in character, that are the beginning of progressive changes that may be favorably influenced by intelligent medical care continued over a long period of time. The electrocardiogram portrays moderate, advanced and terminal states of myocardial degeneration with remarkable exactness.

There was a time when a meager and poorly written history; a partial and indifferent physical examination; urine examination, and a blood examination were considered sufficient for the diagnosis and treatment of heart disease. Now, the history must be in meticulous detail and the physical examination must include a studied, careful examination of all parts of the body. The urine and blood examinations are as important as ever. In addition, there must be an electrocardiogram; in some cases, a series of electrocardiograms, a fluoroscopic observation and an x-ray picture of the chest, taken at a target distance of four to six feet, before a correct diagnosis can be made and the most effective treatment instituted.

When the electrocardiogram first appeared as an added diagnostic aid, it was viewed by practicing physicians with a good deal of skepticism. It was considered an intricate puzzle, difficult to interpret, and of value only to those physicians who had a knowledge of higher mathematics sufficient to understand the theory of what appeared on superficial examination to be an extremely complicated graph. Knowledge of the physics of light is necessary to the proper making of an x-ray film that will depict correctly existent conditions. The technique resulting from that knowledge, once established, becomes the guide to technicians for the making of subsequent pictures. Correct interpretation of a properly made x-ray film is entirely independent of the knowledge that led to the correct making of the film.

Now that experience in the making of a large number of electrocardiograms has shown that the various conditions found in a study of the normal and abnormal heart consistently present the same electrocardiographic pictures, it is possible for all physicians to acquaint themselves with what the electrocardiogram shows and to dismiss from their minds the belief that knowledge of the theory of the electrocardiogram is necessary to the making of a correct diagnosis.

The value of the electrocardiogram is both positive and negative. If there is pathology in the heart muscle the electrocardiogram offers positive evidence of its presence. The negative value is evident when the patient presents symptoms pointing to the heart as the diseased organ but the electrocardiogram shows the heart is not at fault. In these cases the electrocardiogram will offer visual proof either of the integrity of the heart or of functional disturbance due to pathology in some other part of the body.

Let us further examine briefly the negative value of the electrocardiogram. Patients frequently present symptoms that may be very confusing and make it difficult for the physician to determine whether or not he is dealing primarily with disease of the heart or with some condition that is affecting the normal function of the heart. A frequent example is an aortitis that will be revealed by the x-ray. Cholecystitis and colitis may give rise to symptoms that lead to the conclusion that the heart is primarily the cause of the illness from which the patient suffers. The effect of gall bladder disturbance may be reflected in the electrocardiogram, but a return to the normal, clinically, and as shown in subsequent electrocardiograms, will be noted if the disturbance in the gall bladder and colon is promptly corrected and if too much damage has not been inflicted on the heart. The fibroid uterus and the damaged prostate will in time exact their toll from the heart and the amount of damage can be determined by the electrocardiogram.

One object of this paper is to show the value of a chart upon which are carefully recorded the direction of excursions, the exact measurements in time and in distance of the various complexes, and other departures from the tracings of a normal heart.

Some ten years ago I devised the predecessor of chart shown in Figure I, and have used it in the interpretation of all electrocardiographic records. By its use early changes are detected and the mistakes of pronouncing as normal, records showing minor changes in the myocardium are avoided. It is in the early disturbance of the economy of the heart that these carefully made and recorded measurements prove themselves to be of the greatest value. It must be

kept in mind that acute illnesses may modify the direction, the duration, and the height of the excursions, which may again become normal when the effects of the acute illness have been repaired.

The information presented by the electrocardiographic record is based, first, upon the direction and height or depth of the excursions above or below the horizontal base line; second, upon the width or duration of the excursions measured along the base line and counted in fractions of a second and, third, upon any distortion of the excursions in the manner of notching. To facilitate the obtaining of these measures of distance and time, all electrocardiographic records are provided with horizontal lines accurately spaced for measurement of distance and perpendicular lines accurately spaced for measurement of time. These measurements are respectively in millimeters and in fractions of a second.

Beginning degenerative changes in the heart mucle do not lend themselves to discovery by careless and superficially made examinations of the electrocardiographic record. The record must be carefully inspected, preferably with the aid of a magnifying glass. Only exact measurements and the appreciation of slight departures from the normal range will result in a correct reading. The accurate measurement and recording of the figures on a suitably designed chart is necessary to the proper interpretation of an electrocardiographic record in all cases except those in which the departure from the normal is so extensive and spectacular that a superficial observation is all that is required to establish the major diagnosis. Fibrillation, flutter and bundle branch block are examples of this type of record and do not require accurate measurements to establish the diagnosis, but even in these cases, recording the height and the direction of QRS and T will materially aid in determining the prognosis and the resistance of the

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The information relative to the age, sex and habitus of the patient is of value to the reader of the electrocardiogram who seldom sees the patient. The information relative to the pulse, respiration, temperature and blood pressure is of value both to the physician attending the patient and to the physician who interprets the graph.

At the bottom of the chart is space for rate, diagnosis, remarks and printed information of normal measurements.

ELECTROCARDIOGRAPHIC MEASUREMENTS

CASE NO. DATE STANDARDIZATION
PATIENT AGE REFERRED BY
Pulse Resp. Temp. B.P. Tall Short Thin Stout

	LEAD I	
P Wave	QRS Complex	T Wave
Height	Height	Height
Notching	Notching	Notching
Duration	Duration	Duration
PR PQ Interval	RT QT Interval	Inversion
	Type of ST	
	LEAD II	
P Wave	QRS Complex	T Wave
Height	Height	Height
Notching	Notching	Notching
Duration	Duration	Duration
PR PQ Interval	RT QT Interval	Inversion
	Type of ST	
	LEAD III	
P Wave	QRS Complex	T Wave
Height	Height	Height
Notching	Notching	Notching
Duration	Duration	Duration
PR RQ Interval	RT QT Interval	Inversion
	Type of ST	

RATE: DIAGNOSIS:

REMARKS:

NOTE: Digitalis and other drugs will produce similar changes in T as those produced by coronary thrombosis.

NORMAL MEASUREMENTS

P Wave		QRS Complex		T Wave	
Height	1 to 2 mm.	Height	5 to 16 mm.	Height	1 to 4 mm.
Notching	None or slight	Notching	None	Notching	None
Duration	0.04 to 0.08 sec.	Duration	0.04 to 0.12 sec.	Duration	0.12 to 0.16 sec.
PR Interval	0.12 sec.	RT Interval	0.30 to 0.40 sec.	Inversion	In Lead III only

heart muscle to the assault from which it has suffered.

The time is fast approaching when all physicians will appreciate the necessity of having electrocardiograms and x-ray pictures of the chest of all patients who attain the age of forty. When this is done, sudden and fatal accidents due to coronary occlusion may often be prevented, because the attending physician will be forewarned by the danger signals shown in the electrocardiogram and x-ray film that indicate future untimely disaster.

The demand by physicians for electrocardiograms of all patients is increasing and has extended the usefulness of this very necessary laboratory procedure beyond the field of those who devote their time almost exclusively to the diagnosis and treatment of heart disease. It is significant to note that those physicians who have had the greatest amount of experience in clinical study of heart disease are most insistent upon confirming their findings and deductions with what is shown by the electrocardiogram and the x-ray film of the chest. New books dealing with the subject of electrocardiography are being written, which contains many observations and conclusions that should prove both interesting and instructive to all physicians.

2800 Milwaukee Avenue.

THE CAMEL AND THE DOCTOR

L. C. Ives, M. D.

PEORIA, ILL.

Gentlemen: Let us waste no time in idle conjecturing as to the identity of this camel—it is a hybrid—a cross between state medicine, alias federal medicine, alias socialized medicine and political commercialism.

No longer are the shoulders of this camel pushing aside the tent flaps; no longer do this camel's hips strain at the tent pegs; nor is the tail flagrantly flipping in the interior of the tent of medicine.

Do you disbelieve? Arouse yourselves and behold.

Have you forgotten Federal relief manipulation? Who decided that a person was ill? Who decided the necessity (or otherwise) for hospitalization and who decided the attending physician's compensation—if any? Who was the only one, qualified to have judgment in these matters? Was he, the man of medicine, called upon? Oh no! The salaried non-medical investigator, cemented to his or her job by the precinct boss, did these things and at a commercial gain that was divided, many times, with the political bigwigs. And State relief! How many times has the medical profession wondered to whom that word relief applied—the sick or the administrative job holder. True, this so-called relief program gave opportunity for opening the flood gates of wild rampant brain storms among the medical irresponsibilities, held in check by organized medicine prior to invasion of our provinces by self aggrandizing lay persons.

Perhaps this is the time for members of organized medicine to take to task those leaders, elected or self appointed, who have betrayed medicine by their falterings and pusilanimity. It is high time for red blooded, clear brained Doctors of Medicine to take control of organized medicine and remove the torch from the vacillating hands of those who have attempted to lead us away from the centuries old standards of medicine.

However, let's not liken our actions to the self-appointed four hundred thirty of the Committee of Physicians who have, so recently, crowded themselves into the limelight, flapping their mercolized wings with infantile glee and enthusiasm.

One wonders if the organizers of this committee did not take a page from "Fifty Years of Medicine and Surgery"—an autobiographical sketch by Dr. Franklin H. Martin—paying particular attention to the subtle maneuvers and parliamentary tactics employed in the organization of the American College of Surgeons. Well—perhaps they, too, will be comfortably ensconced in beautiful stone buildings and be allured to wear gorgeous caps and gowns trimmed in red.

Milton C. Winternitz, M. D., secretary of this committee in an especially prepared release for Associated Press writes:

"The general unrest in recent-day medicine shows that neither the physician nor the patient is satisfied.

"To me, this unrest is demonstrated in three fundamental problems:

Address before the 64th annual meeting of the North Central Illinois Medical Association, December, 1937.

1. How can we give the individual the benefit of the amassed knowledge of today?"———

What a childish question! The answer is centuries old. The individual has always received the benefits of all available knowledge from the true Doctor of Medicine—who has separated the chaff from the wheat, the theoretical from the practical and applied the benefits to the sufferer. In no case has the sick or injured individual benefited from the crowded clinics. Why? Because every individual is a biological law unto himself. Nine thousand nine hundred and ninety-nine consecutive fractures or pneumonias make no accurate symptom complex for the ten thousandth fracture or pneumonia.

Sick people are not Ford automobiles.

This is an every day truism to the real physician; and, incidentally, very few physicians who appreciate this truism find time for secretaryships for such organizations.

The secretary's second problem: "How is the individual, in the complex medical practice of today, going to decide what he is to do when he is ill? Where is he going to find the right doctor?"

Again we pity the poor secretary and his confreres. Does he not know that were he to take himself away from his tiled halls—away from his systemized clinics; were he to throw himself and his interests—heart and soul—into the never ceasing, ever varying, fight between Life and Death, into the San Micheles—he would never fail to find the right doctor.

Let him kneel at the feet of the One Physician and rededicate himself; let him search out the country doctor, ride with him and learn the truth of the beauties of medicine; and he will waste no time writing releases for any press.

His third question and last: "How is the public at large going to meet the expense of modern medicine" is as easily answered.

Modern medicine is not expensive. It is the modern appetite that is costly. It is beyond the amplitude of understanding of self appointed committees to realize that millions of dollars of hospitalization are unnecessary each year? This is jointly due to the American public, propagandized to rush to the hospital on the slightest pretext and to the many of the profession who advise hospitalization when a small amount of serious differential diagnosis would avoid unnecessary x-rays and hospital beds with resultant expense.

The elimination of unnecessary medicines—having no virtue except the verbosity of the drug representatives—would be a wise economy. A sharp curtailment in the policies of the government in the erection of showy architectural dreams with costly exterior and mediocre interior would result in a sturdier, more self-reliant American race.

A nation whose mechanics disdain the street car to and from work cannot consistently protest the cost of medical care, although encouraged by salary drawing health service employees and designing political leaders.

I wonder, has the profession overlooked the action of the Federal Home Loan Bank Board with its first appropriation, without the consent of Congress, of twenty thousand dollars of the tax payers money for an actual Federal socialized medicine? This allows every other agency of the government the same privilege and also John L. Lewis' contemplated 800,000 C. I. O.'s United Federal Workers of America.

This in spite of Germany's fifty years of State Medicine. In 1930 there were *thirty-six thousand doctors* and *thirty-two thousand bureaucrats* directing the doctors, but in 1936 there were *thirty-two thousand doctors* and *thirty-six thousand bureaucrats* directing the doctors.

Again Germany learned that it cost *four times* as much to doctor thirty-five million state insured as it cost to doctor thirty thousand non-insured.

Our Government's motto seems to be: "If there are any mistakes to be made, the U. S. A. will make bigger and greater ones."

Have you forgotten that a short time ago the plea was, in support of the cause of socialized medicine, that it would be such a boon to the struggling young doctor? I am informed by reliable authority that these poor young doctors —some of them—realized *thirty-nine cents a professional visit* and that the established physician made the next calls for no compensation, in due and customary performance of their daily duties.

Do you remember the open threat of the U. S. Senator from Illinois—he of the pink whisker fame? Have you forgotten for whom he claimed to speak? Do you remember the warning of loss

of professional existence? Your safety and the safety of the profession depends upon your memory.

Is this campaign one of enlightenment? Is this campaign to guide the unfortunate luetic victims to the medical profession for treatment and restoration to health; or is it to make *another* army of non-medical job holders awarded the payroll by the always *grateful* politicians? Remember, gratitude is the lively anticipation of favors to come.

General Pershing is returning from abroad to head the antisyphilitic campaign according to a November issue of *"Life."* General Pershing has won his spurs—but as a military man. Is the medical profession so dumb that we can find no man capable of leading this movement? After all, is there a royal road to medicine?

General Hugh Johnson jumps into the syphilitic campaign—according to the same periodical. Would he refrain *from jumping* were a million candle power spot light present?

Again *"Life"* portrays prominent club women submitting to the drawing of blood for Wassermanns—Club women in the eradication of syphilis!—as much to their element as though they were wet nursing starving tenement babies—and the same amount of benefit. Incidentally the ratio of positive Wassermanns in the club women and the tenement mothers would be interesting.

How many of them—do you think—will sell their all and spend their monies to rescue victims of the primrose path? How many of them will be forced to forego their afternoon cocktails, Monte Carlo, the Riviera because of their brooding over the syphilitic unfortunates writhing in luetic agony?

Health by law—only the disciples of Aesculapius know the full extent the hollow mockery thereof.

I offer a suggestion or a challenge, as it may be.

Let every politician, every publicity seeker, every so-called social worker, take a Wassermann (with or without the presence of the Press) and agree to withdraw from any and all activities if a positive is found:—this glorious country will benefit immeasurably.

Were our governing forces—or those that presume to govern—with knowledge sincere; were the health of the citizen of real first importance; were the politician (mind you I did not say statesman) thinking in terms of the common man, instead of the hundred of thousands of political henchmen to be rewarded; the remedy would be self evident.

This entire problem would be turned over to the Profession of Medicine together with the monies anticipated and with necessary police powers. In one year's time more would be accomplished towards the eradication of syphilis than will be accomplished in the first hundred years of political maneuvering.

Little did one realize a few years ago that the spirocheta pallida would become the Jacob's ladder for the social, political and professional select.

Are you yet in doubt as to the occupant of the tent of medicine?

We might look at that mysterious organization of interns in New York City, in Chicago, and other cities as yet uncovered.

It seems that another of the ancient traditions of medicine is to be relegated to the horse and buggy days.

WHEREAS; formerly, the neophyte in medicine—having laid his soul and heart on the altar of Aesculapius—gave his every thought (though his entrails cried out in hunger) to his advancement in knowledge of the art of medicine; his one burning desire to perfect himself in the alleviation of human miseries; at this time we find the Interns Council of America demanding through dubonet politicians, one thousand to three thousand and two hundred dollars a year—this with board, room and laundry.

Quoting from *Medical Economics* of November, 1937:

"Behind the pay for intern machinery ever looms the Intern Council—a rather mysterious organization, everything. Its listed officers at 41 E. 42nd Street, Manhattan, are really those of a law firm. The only representative is a Miss Dietz and she is not always there. All requests for information must go through her; yet she insists she can not talk officially. Questions about the personnel, financial backing of the organization are politely but firmly discouraged.

"To reach the officers, you leave a telephone number with Miss Dietz.

"Then sometimes, from somewhere, a voice calls you. Unidentified, it makes an appointment with a member in the part of the city you find most convenient. No information to give over the phone——. One of the group, waxing unduly enthusiastic, answered one of the interviewer's queries with a soap box oration, in which he predicted the day when 'all these abuses will be swept away through the panacea of socialized medicine'—a speech which ended abruptly when another member nudged him."——

The author, Arthur J. Gieger, quotes a statement of Israll Amter, New York State Chairman of the Communist Party: ". . . The Communist Party fully supports the demands of interns in New York City and nationally for the right to full compensation for services rendered; for the end of the system of exploitation which exists now in many hospitals; for the right of the intern for a fair *trade union wage*" (Italics mine).

What a stench our camel has!

Are you still skeptical?

The magazine, *The American,* for November, carries a page (68) "Would You Like Uncle Sam to Be Your Family Doctor?" and fifty per cent. of the quotations are affirmative.

Take cognizance of the fact: that the industrial insurance carriers of this city control the medical lives of approximately eighty per cent. of the workingmen.

Remember that these insurance companies are by their own confessions "in the business of medicine to stay"—and at a profit of dollars and cents.

At least they do not camouflage themselves with hypocritical altruism.

Organized labor is seething at the inadequacy of the personal element in the equation, but as yet underestimates its power.

What would happen did labor force the striking of the words "at his own expense" from Section 8a of the Illinois Industrial Act? At once the injured workman would call the doctor of his confidence and change the entire situation.

No longer the dictated return to work before the pain subsided; no longer the controlled testimony before the Industrial Commission; no longer the dividends from human misery.

The insurance companies will spend thousands of dollars for the uplift of legislative comfort. It will be a battle.

Are you interested?

And so—we find the camel—in the tent of medicine.

What will the profession do to the Communistic-backed Intern Council?

Could the profession, by working a little harder, forego the pleasure of interns for one year, two years or three years or until such time that the interns took up their labor for love of art rather than pecuniary gain?

Certainly! And the sooner we start, the better for everyone.

Can we help change the monopolistic, autocratic dividend forcing insurance carriers to temper commercialism with mercy?

Yes we can!

Talk to your patients, they will do the rest.

Can we save medicine from the misery, the desperation and the desire that socialized medicine always provides?

Yes we can!

Let the nation know through the news channels—the radio, the silver screen, the rostrum—of the true color and attributes of this camel of socialized medicine and the result is inevitable: The return of true medicine to the couches of the nation's ill.

Alliance Life Bldg.

DID NOT TAKE OFF HIS HAT

A salesman was driving along a country road one day when he saw a red-headed Negro child playing in front of a little shack sitting on the edge of a clearing. He had never seen a red-headed colored child before, so his curiosity was aroused. Stopping his car in front of the yard, he called out to the old colored mammy who was sitting on the porch:

"Is that your child?"

"Yassur, he is," answered the mammy.

"Well, tell me something," he went on, "how did he happen to get red-headed?"

"He was borned lak dat," replied mammy.

"I can't understand that," said the salesman. "You certainly don't have red hair. Is there any red hair back in your family?"

"Naw suh, not a bit," replied mammy.

"Well, how about the father of the child, is he red-headed?" the salesman persisted.

"Ah don' know dat, mister," answered the mammy. "You see, dat gentleman didn't take off his hat."

Miscellaneous

SULFANILAMIDE IN TREATMENT OF GONORRHEAL VULVOVAGINITIS

Samuel J. Hoffman, Maurice Schneider, Maurice L. Blatt and Russell D. Herrold, Chicago (*Journal A. M. A.*, May 7, 1938), used sulfanilamide in the treatment of gonorrheal vulvovaginitis in twenty-five children varying in age from 3 months to 10 years. Three of this group had chronic infections at the time treatment was instituted, one subacute and the remainder acute infections. No local treatment was used and sulfanilamide was administered orally in fruit juice to all the patients. During the first two days the daily dosage was three-fourths grain (0.05 Gm.) per pound of body weight in four equally divided doses at intervals of six hours. During the next five days the dosage was reduced to three fourths of this amount, or nine-sixteenths grain (0.04 Gm.) per pound daily. During the second and third weeks the dosage was reduced to three-eighths grain (0.024 Gm.) per pound daily or one-half the initial dosage. At the end of a three weeks course of treatment a rest period of one week was given regardless of the results of smear examinations. All patients whose smears were positive at the end of this rest period were given a second course exactly like the first. A rest period was also given at the end of the second course of treatment, and for the majority of patients who were still infected at the end of the second rest period a third course of treatment was prescribed. A few patients were given a fourth course of treatment after the third rest period. Only seven patients were apparently cured during the first course of treatment, or under a period of twenty-one days (average 17.3 days). By apparent cure we mean a clinical disappearance of all signs of infection from the urethra, vagina, cervix and rectum, as well as negative smears from these areas. During the second course of treatment, nine additional patients were cured between the thirty-fifth and forty-ninth day of treatment, with an average of 42.9 days. Seven of the nine patients not cured were given a third course of treatment, and one of this group was cured during the third course, or in sixty-three days. Four of the six remaining patients not yet cured were given another course of treatment after the usual rest period, and only one of this group of four was cured by such additional treatment. It would seem then that patients who do not respond to two standard courses of treatment have gonococcic infections that are relatively resistant to thereapy with sulfanilamide. All patients were kept in the hospital for two weeks after negative smears were obtained, and all those listed as cured had follow-up examinations from one to three months after discharge from the hospital. It was exceptional for patients to have a recurrence if they were clinically and microscopically normal for a period of two weeks after discontinuance of the drug. The children have tolerated sulfanilamide extremely well as compared to adults, in whom reports have indicated a high incidence of reactions.

NOISE AND ITS EFFECT ON HUMAN BEINGS: NOISE CONTROL AS A BY-PRODUCT OF AIR CONDITIONING

In their dissertation on noise and its effect on human beings, Carey P. McCord, Detroit; Edwin E. Teal, Ann Arbor, Mich., and William N. Witheridge, Detroit (*Journal A. M. A.*, May 7, 1938), conclude by saying that the American Medical Association's Committee on Air Conditioning recognizes that proper air conditioning is one factor tending to diminish the ill effects of noise of some types. The procurement of closed windows, doors and other sound barriers commonly associated with artificial climates in public buildings, office buildings, department stores, theaters and so on may eliminate as much as 75 per cent of the noises of extraneous origin. In industry, air conditioning offers little promise of protection against noise for workers employed near the origin of noise. Vibration in ranges below audibility has a prominent role in the production of injuries arbitrarily classed as noise diseases. Although inaudible vibrations may involve occupied areas that may be air conditioned, obviously no protection can be secured from such vibrations by air conditioning. The compilation of material making up this report presents extensive evidence that genuine injury is widespread as a result of noise action and that noise deafness is the chief of these dysfunctions in terms of both frequency and severity.

UNDULANT FEVER: ITS TREATMENT WITH SULFANILAMIDE

Brucella melitensis, originally known as Micrococcus melitensis, is pleomorphic, its morphology in part determined by the culture medium or the preparation used for its study. Morphologically it is considered variously by several authors on bacteriology to be a coccus, a bacillus or a coccobacillus. On this basis, with the effect of the drug in question established against certain other pathogenic bacterial forms, Robert L. Stern and Ken W. Blake, Los Angeles (*Journal A. M. A.*, May 7, 1938), working independently, gave sulfanilamide in therapeutic doses to each of three private patients suffering from clinically and serologically established undulant fever. Highly satisfactory and prompt results with clinical cure followed. The maximal dosage according to present standards appears to be necessary.

GRADUATE COURSE IN ELECTROCARDIOGRAPHY

Two Weeks—August 22 to September 3, 1938

An intensive two weeks' course in Electrocardiography for graduate physicians will be given at Michael Reese Hospital from August 22 to September 3, 1938, inclusive, by Dr. Louis N. Katz, Director of Cardiovascular Research. As group and individual instruction will be given, the course is open to both the beginning and advanced student in Electrocardiography.

There will be practice on several electrocardiographic machines and discussion of the principles of their construction and use. There will be sessions on inter-

pretations of electrocardiograms and practice with unknown records. Lectures on the principles involved in standard and chest leads will be given.

It is planned to individualize the course so that at the end of the period each student will be capable of taking and properly interpreting routine electrocardiograms. In order to accomplish this purpose the class will be limited in number. It is imperative, therefore, that reservations be made early.

Reservations may be made upon receipt of $25.00, which will be applied on the tuition. A copy of the program will be sent on request.

For further information address:

The Medical Librarian, Michael Reese Hospital, 29th and Ellis Ave., Chicago, Ill.

AMERICAN CONGRESS OF PHYSICAL THERAPY

The 17th annual scientific and clinical session of the American Congress of Physical Therapy will be held cooperatively with the 22nd annual convention of the American Occupational Therapy Association, September 12, 13, 14 and 15, 1938, at the Palmer House, Chicago. Preceding these sessions, the Congress will conduct an intensive instruction seminar in physical therapy for physicians and technicians—September 7, 8, 9 and 10.

The convention proper will have numerous special program features, a variety of papers and addresses, clinical conferences, round table talks, and extensive scientific and technical exhibits.

The instruction seminar should prove of unusual interest to everyone interested in the fundamentals and in the newer advances in physical therapy. The faculty will be comprised of experienced teachers and clinicians; every subject in the physical therapy field will be covered. Information concerning the convention and the instruction seminar may be obtained by addressing: The American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago.

POST-GRADUATE COURSES IN BERLIN

The Berlin Academy for Medical Postgraduate Study is holding the following international postgraduate courses in June and July, 1938:

1. Postgraduate course in the field of diseases of children, from June 20 to 25, mostly given by the Bessau-sche Universitäts-Kinderklinik (university clinic for children) of the Charité, Berlin. The course is arranged for physicians for children as well as for general practitioners. Fee: RM 50,—.

2. Postgraduate course in the field of urology, from June 27 to July 2. This course is not only of value for urologists but also especially for urologically practicing surgeons, physicians for internal diseases and gynaecologists. Fee: 60,— RM.

3. Postgraduate course in the field of diseases of the mouth and jaw, from June 27 to July 2. This course will mostly be given by the Universitäts-Kieferklinik (university clinic for diseases of the jaw) of the Charité (Prof. Axhausen) and will be highly interesting for surgeons as well as dental surgeons. Fee: RM 70,—.

4. Postgraduate course in the field of neurosurgery, from July 4 to 9. The first neurosurgeons and neurologists of Berlin will give lectures. Fee. RM 70,—.

For further information and programs apply to the office of the Berliner Akademie für ärztliche Fortbildung, Berlin, W 7, Robert Koch-Platz 7 (Kaiserin Friedrich-Haus).

All courses will be held in German.

Foreign doctors and German doctors resident abroad are granted a reduction of fare of 60 per cent on the German Railways Company's lines, when the fare is paid in foreign currency. A foreign physician can reduce the cost of his stay considerably by utilizing the so-called "registered marks." It is advisable to arrange matters with a local bank before departure.

ACCIDENTS ON FARMS*

When a farmer buys an industrial product, he pays for the cost of the industrial injuries involved in the production of that particular object. When the farmer sells his products, he must receive as a part of his selling price the costs of the accidents which have occurred in connection with the raising and marketing of his product.

It is estimated that the annual cost of industrial agricultural accidents in California is $10,000,000.

During the years 1932-1936, inclusive, there were 252 persons killed, and 45,095 employees injured in California agriculture.

It has been stated that in Kansas, in 1934, more than 50 per cent of the occupational deaths in the state occurred on the farms.

It is estimated that the farm fire losses in the United States are $100,000,000 a year and that there are 3,500 lives lost in these fires.

Since the use of electricity, liquefied petroleum gases, farm machinery, and automotive vehicles, has become common on the farms, the deaths from these uses have increased enormously.

Ladders, hand tools, infections and falls from various causes are largely responsible for the great number of injuries and deaths in which machinery takes no part.

The agricultural industry in California has, for a number of years, reported to the Industrial Accident Commission a greater number of injuries to employees than any one other industrial group. These reports do not include the accidents that occur to the farmers or their families; they are not classed as employees.

There is no agency connected with the agricultural industry that can afford to omit accident prevention from its program. They should analyze the accidents as to their cause and effect, and then remove the causes. Every such organization should also stress the necessity for proper training in the care and handling of injuries and injured persons.

Agriculture, if it so desires, can make as good a record as the other industries have made.

*Reprinted from the Bulletin of the California Industrial Accident Commission.

SURGICAL OPERATIONS IN ILLINOIS

According to a release by the Department of Public Health, it appears that about half a million surgical operations are performed on human beings in Illinois annually. This estimate is based on a report from the U. S. Public Health Service, which shows that there were during a single year 65 such operations per 1,000 people among 8,758 families comprising 39,185 individuals who resided at the time of the study in 130 localities in 18 states. These families were visited periodically by nurses during a period of twelve months and a record made of all illnesses.

Tonsils and adenoids were responsible for considerably more operations than anything else, 18 per 1,000 people, against a rate of about 8 per 1,000 for the setting of bones and 6 per 1,000 for appendicitis, the next two most frequent causes. Then came the removal of tumors, about 4 per 1,000, and the lancing of boils, about 2 per 1,000.

If these rates hold good in Illinois there are about 140,000 operations annually for tonsils and adenoids, 60,000 for setting bones, 45,000 for appendicitis and 30,000 for tumors.

If these estimates hold any degree of accuracy they give a new and important emphasis to the life-saving importance of surgery. The number of deaths from appenditicitis, for example, ranges from 1,000 to 1,200 per year in Illinois and some of these never go to operation. Thus for every fatality from appenditicitis there are about 45 who recover from that disease as a result of surgical treatment. There are about 10,000 deaths per year from cancer in Illinois and 30,000 operations for tumor, suggesting a 3 to 1 chance of recovery from that serious disease when appropriate treatment is resorted to soon enough.

POSTOPERATIVE CORONARY ARTERY OCCLUSION

Arthur M. Master, Simon Dack and Harry L. Jaffe, New York (*Journal A. M. A.*, April 30, 1938), discuss the thirty-five proved attacks of coronary artery occlusion occurring after operation in the Mount Sinai Hospital during the years 1931 to 1937. Previous coronary artery disease was probably present in every case. Two-thirds of the patients were 60 years of age or older. Only four were under 50. Surgical shock was present in 60 per cent of the cases. Postoperative coronary artery occlusion presents a picture similar to pulmonary embolism, characterized by shock, dyspnea and cyanosis. Precordial pain is usually absent or is slight. Sixty-six per cent of the patients died, in eight of whom death was attributed directly to the occlusion; in the remainder it was associated with serious surgical complications. Occlusion occurred in the first three days after operation in half the cases. Coronary occlusion appears extremely rarely in patients in the medical wards. The postoperative occlusions comprised 5 per cent of the total number of attacks in the hospital. The possible factors associated with the operation leading to coronary occlusion include surgical shock attended by a diminution in blood volume and a drop in blood pressure, tachycardia, dehydration and infection. In patients with coronary artery disease, operation may be followed by coronary occlusion. Therefore, patients over 45 years of age should be thoroughly examined, and when coronary sclerosis is present the question of surgical intervention and the choice of surgical procedure should be given due consideration.

RIBOFLAVIN: PHYSIOLOGY AND PATHOLOGY

In discussing the physiology and pathology of riboflavin A. G. Hogan, Columbia, Mo. (*Journal A. M. A.*, April 9, 1938) states that various physiologic roles have been ascribed to riboflavin, but the only one concerning which there is no dispute is that it has some function in the oxidation processes of the cell. Knowledge of these reactions is chiefly due to Warburg and Christian. A study of the properties of the yellow enzyme indicates that the necessity for including riboflavin in the diet is that it is an essential constituent of the yellow oxidation enzyme that cannot be synthesized by the animal cell. It is probable, then, that the vitamin activity of flavin is due to the fact that it forms an ester with phosphoric acid, and this ester combines with protein to form the yellow oxidation enzyme. Apparently, if no hemin substances are present, all of the cell respiration is accomplished by Warburg's yellow ferment. On the other hand, if iron compounds are present it may be that only a small part of cell respiration is due to this enzyme. The author further discusses riboflavin in tumor tissue, its storage and excretion, the non-toxicity of an overdosage or riboflavin, content of the eye, its deficiency and relation to cataract, the fact that its deficiency which is not the primary cause of either pellagra or blacktongue but perhaps a complicating one, riboflavin and pernicious anemia, the effect riboflavin and adrenal cortex extract have on growths in rats after it has been inhibited by iodoacetic acid poisoning, and the bearing of riboflavin in avian nutrition.

YELLOW BONE MARROW EXTRACTS IN GRANULOCYTOPENIA: PRELIMINARY REPORT

Up to the present time an extract from yellow bone marrow free of the large amount of fat that is present in the refined marrow has been administered to twenty patients with granulocytopenia. Such a concentrate was prepared by C. M. Marberg and H. O. Wiles, Chicago (*Journal A. M. A.*, Dec. 11, 1937), by extracting the unsaponifiable portion of the marrow and dissolving it in a bland oil for oral administration. The equivalent concentration of 2 Gm. of marrow per drop has been found quite satisfactory for clinical use. In all but seven of the twenty patients there has been a rise in the number of granulocytes, usually with a return to normal figures. In fact, if active infection persists during the period of treatment the granulocytes may rise to figures far above normal. Of the seven patients who did not give a satisfactory response, two were later found to have aplastic anemia; in four a differential

diagnosis was not made, and the last had diabetes and appendicitis in addition to the granulocytopenia. The rise in granlocytes usually begins within from twenty-four to thirty-six hours, as contrasted with the effect of pentnucleotide, which is not usually manifested in less than from four to five days. Flipse has obtained similar results in several cases.

SUCTION TEST FOR CAPILLARY RESISTANCE IN THROMBOCYTOPENIC PURPURA

R. H. Egerton Elliott, New York (*Journal A. M. A.*, April 9, 1938), points out that determinations of the capillary resistance by the suction method are performed as a matter of routine at each visit of all patients with purpura who attend the Spleen Clinic of the Presbyterian Hospital. In all, some thirty-five persons with purpura, not to mention numerous persons with various other types of blood dyscrasias, are being so observed. In each case the values for capillary resistance tends to parallel closely the bleeding tendency, low values being present in the active phases of the disease and higher, or normal, values in the inactive phases. This has been found to be true irrespective of the level of the platelet count. In other words, when as occasionally happens, the bleeding tendency is active in the presence of a normal platelet count or when the tendency is inactive in the presence of thrombocytopenia, the resistance values tend to parallel the former rather than the latter. After splenectomy the capillary resistance may be the first measurable entity to be quantitatively affected. In seven recent cases of so-called idiopathic thrombocytopenic purpura in which splenectomy was performed, the resistance value rose from 5 to 40 cm. of mercury within the first twenty-four hours after operation. Immediately after splenectomy and at the time resistance rose all clinical bleeding ceased. The elevation of the platelet count following operation may lag behind the rise in resistance.

INTERPRETATION OF EXCESSIVE GONADOTROPIC HORMONES EXCRETED IN URINE IN EARLY PREGNANCY

A. J. Kobak, Chicago, (*Journal A. M. A.*, April 9, 1938), cites a case that demonstrates the difficulty in diagnosis when, after the expulsion of a hydatid mole, an unexpected pregnancy intervenes. The diagnosis was obscured by the contraceptive precaution. Furthermore, the possibility of a pregnancy occurring within four weeks from the date of the curettement was unlikely. With the uterus growing rapidly for one week, the hemorrhage and the hormone obscrvations, the diagnosis of uterine pregnancy became even more dubious. The patient was admitted to the Michael Reese Hospital, where the uterus was emptied by an abdominal hysterotomy. It contained a normal fetus and placenta about 10 weeks of age. The left ovary contained a normal corpus luteum of pregnancy. The fibroids were removed and the patient made an uneventful recovery. Microscopic examination of the placenta showed nothing abnormal. Two subsequent Friedman tests were negative. When more negative reports are made, the diagnostic value of large quantities of gonadotropic hormones in the urine will be more limited. The clinical history and physical appearances should be given primary consideration before one concludes that chorionepithelioma or hydatidiform mole is present.

HATS OFF TO OUR DOCTORS

"Does anyone know if there exists any more a good old-fashioned doctor?" asks "A Patient." Most certainly I do! We have had more sickness during the last 15 months than during the previous 15 years. In each case our doctor knew what to do without "consulting books." "Friend and adviser?" Most assuredly! As much as the oldest friend of the family. "Confidence?" Well, we have told him things that we never would think of telling our dearest friends. As far as the preaching of money is concerned, we have never heard him say a word about it. In fact, he has always said. "Don't rush yourself." I know of cases where he has given his services free of charge, and he is no millionaire either.

But, if the doctor does mention money, is it not coming to him. Doctor's and dentists' bills usually are put off to the very last. "He can wait." How long would "Patient" be "patient" and work without getting paid for his work?

I say, "Hats off to our doctors." Are they not always willing to answer our distress signals, rain or shine? By coming in contact with all kinds of contagious diseases, do they not gladly risk their own lives just to help us? And then we criticize them!

MRS. JOHN WOLFF.

THE FATHER OF AMERICAN PSYCHIATRY

In that year Dr. Benjamin Rush joined the staff of physicians at Pennsylvania Hospital, beginning a thirty year period of service that was fraught with great significance to the mentally ill in America. He was the first American teacher to institute a comprehensive course of study in mental disease; he was the first American physician to attempt an original systematization of the subject. The theoretic structure that he erected was decidedly unsteady, as we shall see, but it marked a real beginning and an honest one. He wrote the first general treatise on psychiatry in America, and it is no mean tribute to his genius that it remained the only American work of its kind for seventy years after publication. He fully earned the title by which he was known to later generations—"The Father of American Psychiatry."—Deutsch, Albert: The Mentally Ill of America, New York, Doubleday, Doran & Co., Inc., 1937, p. 72.

Society Proceedings

KANKAKEE COUNTY

The April meeting of the Kankakee County Medical Society was held at the Kankakee State Hospital as guests of Dr. and Mrs. Morrow, members of the staff and their wives.

Dr. Norton G. Becker of the Kankakee State Hospital talked on the use of Metrazol in the treatment of psychoses and neuroses with presentation of cases.

Dr. Lewis J. Pollock, head of the Department of Nervous and Mental Diseases Northwestern University, talked on tumors of the brain.

Very truly yours,

CHARLES ALLISON.

Marriages

ROY O. HAWTHORNE to Miss Louise P. Bidwell, both of Kankakee, Ill., in February.

CLETUS T. KEARNEY, Gridley, Ill., to Miss Helen Garm of Beardstown, February 26.

Personals

Dr. Ralph R. Ferguson, ex-president of Illinois State Medical Society and chairman of the educational committee, after several months illness resumed practice, June 1.

Dr. Ferguson's numerous friends in the profession will be pleased to learn of his restoration to health.

The Stephenson County Medical Society was addressed, April 21, by Dr. John W. Ferrin, Chicago, on "Surgery of the Prostate."

The St. Clair County Medical Society was addressed in East St. Louis, May 5, by Dr. William J. Dieckmann, Chicago, on "Abnormal Labor."

Dr. William R. Cubbins, Chicago, discussed "Fractures of the Hip" before the Sangamon County Medical Society in Springfield, May 5.

Dr. John T. Gernon, Chicago, addressed the McDonough County Medical Society at Macomb, April 20, on "Medical and Surgical Consideration of Renal Calculi."

At a meeting of the Will-Grundy County Medical Society, April 20, Dr. G. Henry Mundt, Chicago, spoke on "Management of Chronic Nasal Infection."

At a meeting of the Madison County Medical Society, May 6, in Madison, Dr. Robinson Bosworth, East St. Louis, discussed "The Findings of Minimal Tuberculosis."

The Rock Island County Medical Society was addressed in Moline, April 12, by Drs. Channing W. Barrett, Chicago, on "Preservation and Restoration of the Pelvic Floor" and Dr. George D. Hauberg, Moline, "Management of the Diabetic Patient."

Dr. Brockway D. Roberts, Wayland, Iowa, has been appointed professor of hygiene and director of student health at Knox College, Galesburg. Dr. Roberts graduated at the University of Illinois College of Medicine, Chicago, in 1935.

Dr. Walter Schiller, pathologist at Jewish Memorial Hospital, New York, has been appointed chief of the pathology department at Cook County Hospital to succeed the late Dr. Richard H. Jaffé. Aged 50 and a native of Vienna, Dr. Schiller graduated at the University of Vienna in 1912. He has served as assistant pathologist of the Military Hospital, Vienna; resident pathologist of the Clinic of Internal Medicine, and for fifteen years as assistant to the Second Gynecologic Clinic and director of laboratories.

Dr. Frederick Rehm Schmidt gave a paper on "Diagnosis of the Commoner Skin Diseases" before the Madison County Medical Society, June 3.

Dr. Samuel M. Feinberg addressed the Clinton County Medical Society at Clinton, Iowa, May 5 on "Summer Allergy."

Dr. I. Harrison Tumpeer addressed the Maimonides Medical Society of Detroit, Michigan, at the Statler Hotel, May 3 on "Pediatric Adventures in Allergy."

Dr. Edward H. Ochsner presented two papers at the annual meeting of the Oklahoma State Medical Society in Muskogee, May 10 and 11.

Dr. Eric Oldberg spoke at the Manteno State Hospital before the Kankakee County Medical Society, May 12, on "The Relationship of Neurological Surgery to Psychiatry."

Dr. Julius H. Hess spoke before the Bureau of Maternal and Child Health, New Jersey State Department of Health, May 5, on "Progress in Child Health in the United States."

At the meeting of the 8th District Indiana Medical Society held at Muncie, May 12, Dr. Clarence F. G. Brown discussed the "Diagnosis and Medical Treatment of Gallbladder Disease," and Dr. John L. Lindquist presented a paper on "The Differential Diagnosis and Surgical Treatment of Gallbladder Disease."

Dr. Benj. H. Breakstone addressed the Illinois State Electric Medical Society at its convention, May 17, on "Increasing Indications for and Simplified Technique of Cesarean Section."

Dr. Paul H. Harmon, Chicago, and Dr. J. S. Speed, Memphis, Tennessee, addressed the Alexander County Medical Society in Cairo, April 29, on "Suppurative Arthritis of the Hip," with special reference to early diagnosis, location and treatment and on "Fractures About the Elbow Joint," respectively.

Dr. Daniel H. Levinthal addressed the Will-Grundy County Medical Society, Joliet, Illinois, at their final program meeting of the year, May 11, on "Reconstruction Surgery of Spastic Paralysis" and "Reconstruction Surgery of Poliomyelitis," with movies.

Dr. Paul H. Harmon, Chicago, addressed the Effingham County Medical Society at a dinner meeting, April 7, on "Review of Poliomyelitis in its relationship to the State Plan for the Care of Crippled Children."

Dr. Paul H. Harmon, Chicago, addressed the Morgan County Medical Society at Jacksonville, April 14, on "Recent Research on Poliomyelitis; the Treatment of Acute Poliomyelitis."

News Notes

—The exhibit window in the Marshall Field & Co. Annex is devoted to the subject of "Hobbies and Health" with suitable examples of the hobbies of members of the Chicago Medical Society.

—Courses to emphasize the importance of health will be added to public school curriculums, the newspapers report. The new courses will in the beginning be added to the program of about fifty of the 349 elementary schools. In the primary grades, regular teachers will provide training in personal cleanliness and give instruction in health habits. In the intermediate grades various causes of disease will be explained to the pupils. In the seventh and eighth grades they will receive instruction from the physical education teacher.

—The city medical society held a special meeting on syphilis in Peoria April 27; the speakers were Reuben L. Kahn, Sc.D., Ann Arbor, on "Interpreting Paradoxical Serum Reactions in Syphilis"; Dr. Albert E. Russell, Washington, D. C., "Syphilis in Industry," and Dr. David C. Elliott, Springfield, "Syphilis and Its Relation to Public Health." Dr. Herbert R. Edwards, New York, discussed "Tuberculosis Case Finding" before the society May 3 and Dr. Maxim Pollak, Peoria, "Lung Cancer."

—The Rockefeller Foundation has given $150,000 to the University of Chicago over a period of three years and extended its grant to the Chicago Institute for Psychoanalysis for a period of five years to support research in psychiatry. The gift to the university supplements the work of a gift of $168,000 three years ago which financed the establishment of a twelve bed psychiatric unit in the university clinics, staffed by a group of five physicians. Dr. David Slight, professor of psychiatry, is in charge. In addition to the new grant to the Institute of Psychoanalysis, $20,000 has been made available for institute fellowships to be awarded young psychiatrists who hold research or teaching posts in psychiatry at universities or other institutions. The institute was founded five years ago with Dr. Franz Alexander as director. The research program has covered the study of emotional factors in the causation of gastrointestinal disturbances, chronic high blood pressure, asthma and hay fever and on the therapy of such cases, the psychoanalytic technic being used.

—Dr. Louis N. Katz, staff member at Michael Reese hospital and professor of physiology at the University of Chicago, was elected president of the Chicago Society of Internal Medicine at the annual meeting May 24.

—Dr. L. C. Gatewood, Rush Medical College, was chosen vice-president and Dr. Clarence F. G. Brown, attending physician at St. Luke's hospital and a medical teacher at Northwestern University, was chosen secretary and treasurer for the fifth time. Members elected to the executive committee are Dr. Robert W. Keeton, head of the department of medicine at the University of Illinois; Dr. G. K. Fenn, professor of medicine at Northwestern University and staff member at St. Luke's hospital, and Dr. Walter L. Palmer, professor of medicine at the University of Chicago.

—Wilton M. Krogman, Ph.D., associate professor of physical anthropology and anatomy, Western Reserve University School of Medicine, Cleveland, has accepted a similar appointment at the University of Chicago, effective in September. According to the announcement Dr.

Krogman will have the opportunity of developing a laboratory of physical anthropology at the university. A native of Oak Park, Ill., Dr. Krogman is secretary for the United States of the International Congress of Anthropology and Ethnology. He was field director of the archeological survey of Illinois for the University of Chicago during the summers of 1927 to 1930.

—James Franck, Ph.D., since 1935 professor of physics at Johns Hopkins University, Baltimore, has been appointed professor of physical chemistry at the university, effective October 1. According to the New York Times, the appointment was made to focus fundamental studies of physical and chemical aspects of life processes basic to the study of disease, which the university has been conducting for some years. The primary objective of this cooperative research is to determine the normal processes of cell growth. Born in Hamburg fifty-five years ago, Dr. Franck received his degree of doctor of philosophy at the University of Berlin. He was awarded the Nobel prize in physics in 1925.

—The Rush Medical College of the University of Chicago will hold its alumni assembly at the college June 6-7. Clinics covering the specialties will be held at Presbyterian and Cook County hospitals and the Central Free Dispensary, and general discussions will be presented by the following:

Dr. Richard K. Gilchrist, Pathology of Cancer of the Rectum.

Dr. Adrien H. P. E. Verbrugghen, Treatment of Acute Brain Injury.

Dr. Ernest E. Irons, Etiology and Pathology of Aspiration Pneumonia.

Dr. George W. Hall, Relationship Between Mental and Surgical Symptoms.

Dr. Gladys R. H. Dick, Scarlet Fever Control.

Dr. William A. Thomas, Water Balance in Medicine and Surgery.

Drs. Willard O. Thompson and Norris J. Heckel, Use and Abuse of Hormone Therapy in Undescended Testicle and Hypogenitalism.

Dr. Edward D. Allen, Endometriosis.

Dr. Carl O. Rinder, Hypoglycemia.

Dr. Archibald L. Hoyne, Therapy of Acute Poliomyelitis.

Drs. Arno B. Luckhardt and Jay B. Carter, Ethylene Anesthesia.

Dr. Dean Lewis, Baltimore, Endocrinology of Surgery.

Dr. Albert H. Montgomery, When Not to Operate in Acute Appendicitis.

Dr. Sidney A. Portis, Clinical Significance of Cholecystography.

Dr. Lewis will also address the annual banquet at the Drake Hotel Tuesday evening; Dr. George W. Hall will be the toastmaster.

Deaths

JOHN FRANKLIN ANDERSON, Chicago; Northwestern University Medical School, Chicago, 1930; member of the Illinois State Medical Society; aged 45; died, March 19.

LYNN MOORE BARNES, Decatur, Ill.; Harvard University Medical School, Boston, 1900; aged 64; died, March 13, of chronic nephritis.

JULIUS H. FIEGENBAUM, Alton, Ill.; Bellevue Hospital Medical College, New York, 1885; formerly city health officer; aged 78; died, February 26, of cerebral hemorrhage.

ADIN HENRY FOSTER, Erie, Ill.; Keokuk (Iowa) Medical College, 1905; member of the Illinois State Medical Society; aged 72; died, March 3, in the Mercy Hospital, Davenport, Iowa, of myocarditis.

EZRA T. GOBLE, Earlville, Ill.; Rush Medical College, Chicago, 1874; an Affiliate Fellow of the American Medical Association; past president of the La Salle County Medical Society; for many years member and president of the school board; formerly mayor of Earlville and bank president; aged 87; died, February 23, of chronic myocarditis.

JOHN W. GREENMAN, Galesburg, Ill.; Keokuk (Iowa) Medical College, 1898; aged 63; died, February 22, in Clermont, Fla., of uremia, nephritis and cerebral hemorrhage.

NICHOLAS J. NYE, McHenry, Ill.; Memphis (Tenn.) Hospital Medical College, 1899; member of the Illinois State Medical Society; aged 66; died, February 16, in Miami, Fla., of coronary occlusion and arteriosclerosis.

ISAAC CECIL WALKER, Marion, Ill.; St. Louis College of Physicians and Surgeons, 1897; aged 67; died, February 26, of pulmonary tuberculosis.

EDWARD AUGUST WEISENHORN, Teutopolis, Ill.; St. Louis University School of Medicine, 1909; member of the Illinois State Medical Society; aged 55; on the staff of St. Anthony's Hospital, where he died, February 13, of pneumonia.

HARRY E. WILKINS, Petersburg, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1893; member of the Illinois State Medical Society; formerly mayor, county coroner and member of the local board of education; aged 72; died, February 22, of myocarditis.

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